

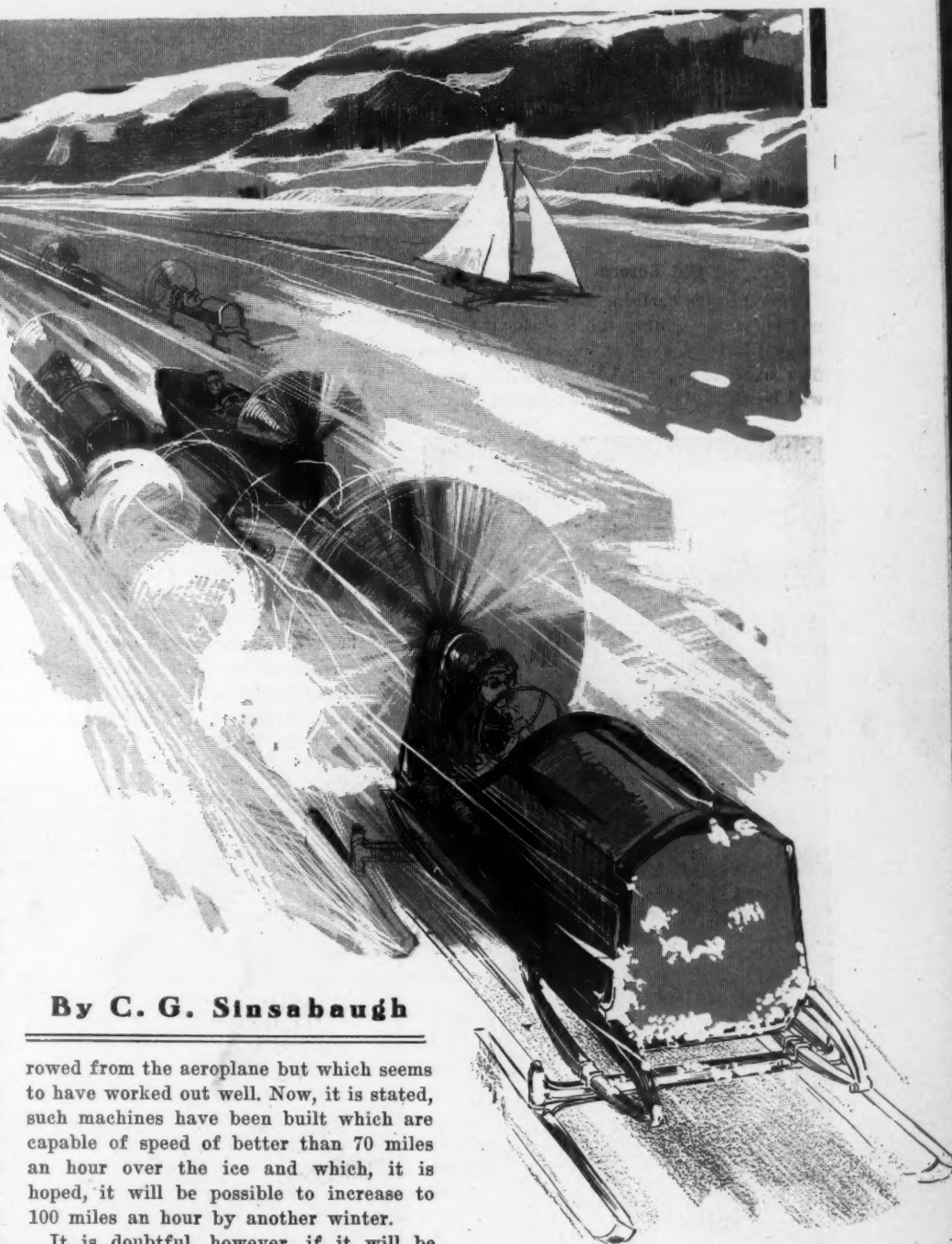
MOTOR AGE

Motor Invades Old King Boreas' Realm

MAN and motor have conquered all elements. Thanks to the internal combustion motor, it now is possible to travel on terra firma at speeds greater than express trains run on rails; it is possible to fly through the air at a speed of 70 miles an hour; it is possible to plow through the water at half that speed, and it is possible to rival the wind in point of speed on the ice. Statistics prove this.

The speed possibilities on the road, in the air and on the water are well known, but few realize the gigantic strides made during the winter which came to its official end this week in the way of developing the windsled which depends upon motor power for its propulsion. Dreamers there have been who several years ago figured it out that eventually winter motoring would be just as popular as the sport in summer time; that some time deep snow would have no terror for the motorists and that keen sport could be had on the ice; that the old-fashioned cutter and the ice boat would have to take a back seat. Now it looks as if those dreams are coming true.

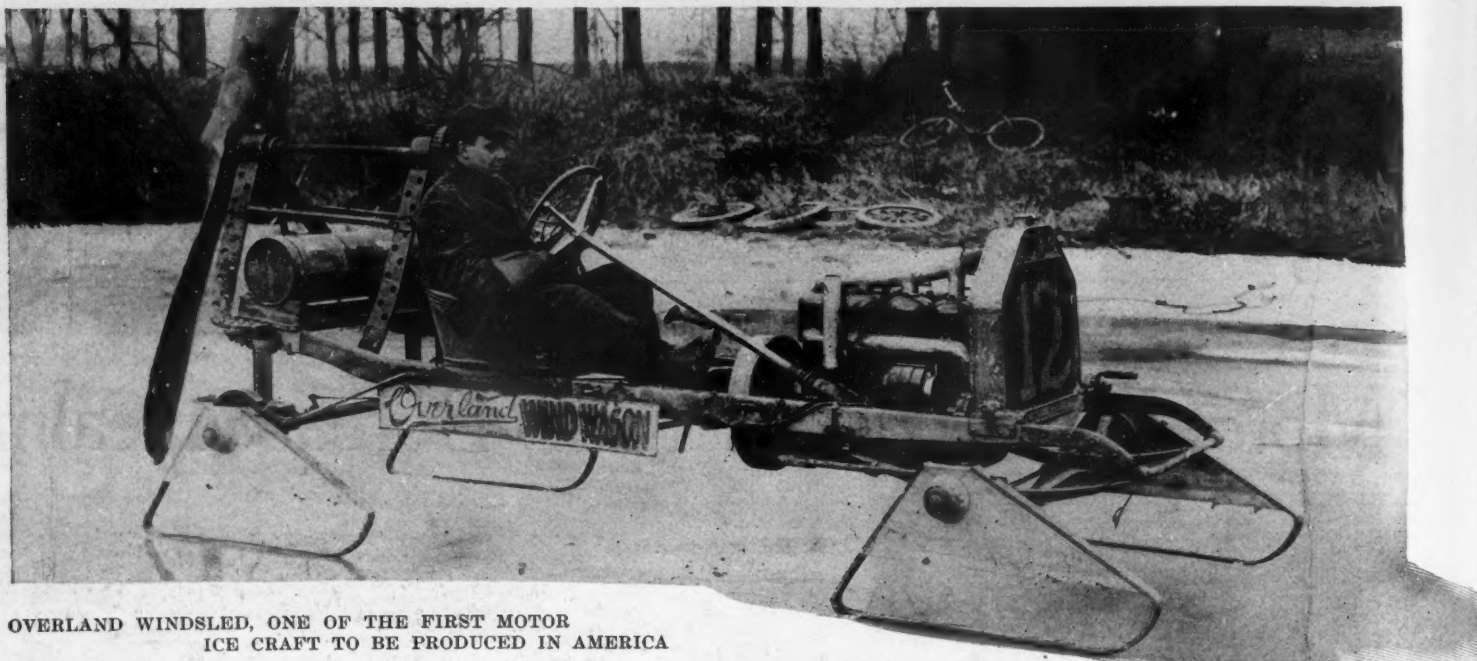
Europe perhaps got the jump on this country in the developing of motor application to the sled, but it is a matter of record that several years back an American concern made a motor sled for one of the arctic explorers which possessed many of the fundamental principles of the modern motor snow and ice vehicle. Since that time the inventors have been busy and in this country last winter practical mechanics brought out several really clever ideas along these lines. They had mostly to do with the combination of propeller and engine, an idea doubtless bor-



By C. G. Sinsabaugh

rowed from the aeroplane but which seems to have worked out well. Now, it is stated, such machines have been built which are capable of speed of better than 70 miles an hour over the ice and which, it is hoped, it will be possible to increase to 100 miles an hour by another winter.

It is doubtful, however, if it will be possible for the motor sled to cover ground as fast as does the motor car of the present day. It would take a mighty motor and a well-designed sled to equal the flight of the big Benz which showed



OVERLAND WINDSLED, ONE OF THE FIRST MOTOR ICE CRAFT TO BE PRODUCED IN AMERICA

132 miles an hour over the sand beach at Daytona, Fla., but such is not beyond the realms of possibility.

Fit Foe for Old Boreas

One thing is certain, though, that it will not be many winters before the old-fashioned ice boat, that skimming dish which flits over the ice faster than the wind, will be thrust into the background by the

more modern invention. The wind is fast but gasoline power is faster and in the battle with old Boreas it will be found that the motor will be far more reliable than any craft which has to depend upon sails and a gale of wind for its power. The motor, of course, can travel faster with the wind favorable, but it is by no means dependent upon King Boreas when it comes to navigating on the ice.

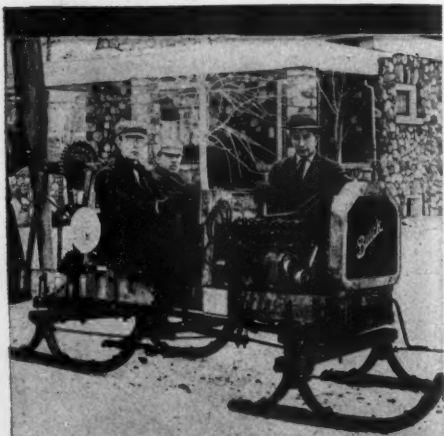
With the improvements that are being made in the windsled it would not seem a wild prognostication to predict that by 1915 even the motor car will feel the effect of this new branch of the industry, if it may be called such. At the present time the motoring world has to turn to Florida for its speed excitement, for the southern beach apparently offers the fastest surface of any in the world. Stretch the imagination a bit and look ahead 3 years. Imagine the windsled, motor-

propelled, perfected to such an extent that 150 miles an hour is a possibility. Imagine one of your real old-fashioned winters in New York, with firm ice making an ideal speedway up the Hudson.

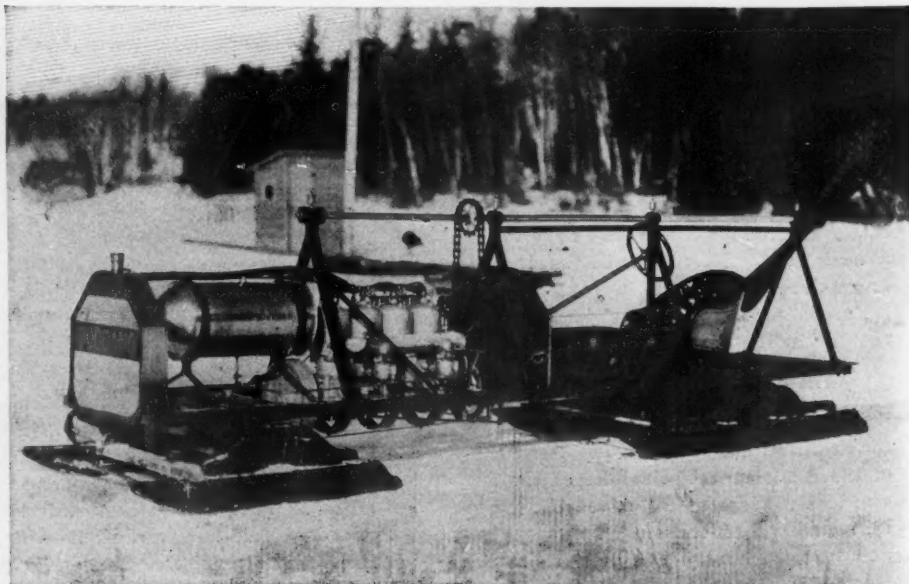
Speed Meet of the Future

With such an ideal course Florida would be thrust into the discard. A great course on the ice could be marked off and New York would be the Mecca for thousands of motorists, attracted by the prospects of a battle with Father Time in which the participants would be the 1915 windsleds, perhaps fitted with a motor the size of that in the big Benz or Mercedes. With the wind in the right direction and the ice in perfect condition, the speed possibilities would be beyond belief at the present day.

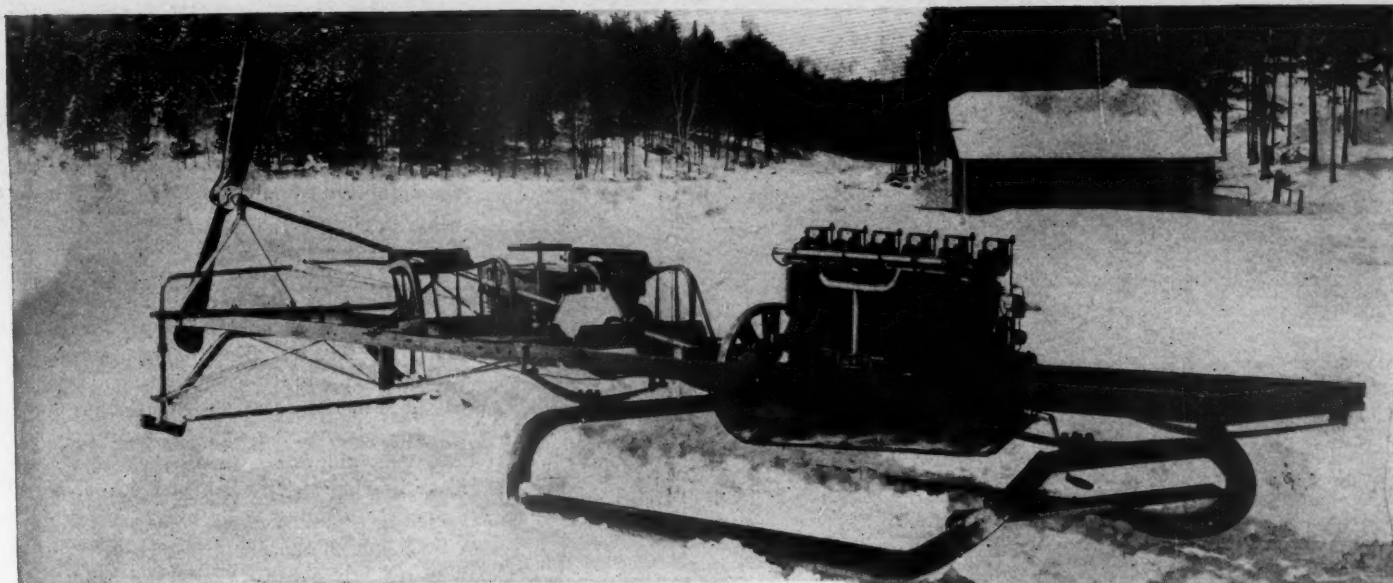
But it takes time to develop these things



TWO HOME-MADE ICE CRAFT THAT ARE SAID TO BE PRACTICAL



SWAIN WINDSLED WHICH IS EXPECTED TO DO BETTER THAN 70 MILES AN HOUR



SARANAC LAKE SPEED CRAFT, WHICH IS FITTED WITH FRANKLIN SIX-CYLINDER ENGINE AND WHICH ALREADY HAS SHOWN GREAT SPEED

and the inventors are just getting started. At the present time they seem to be working along two or three different lines. Some—principally foreigners—have attempted to apply their ideas direct to the motor car, either by means of sledges fitted to the wheels, or huge spurred wheels that will get traction in the deepest of snows. Others have substituted runners for the front wheels and put chains on the rear ones. Still others have attempted to apply the motor power by means of spur wheels which dig into the ice or snow, the power for which is furnished by a motor car engine.

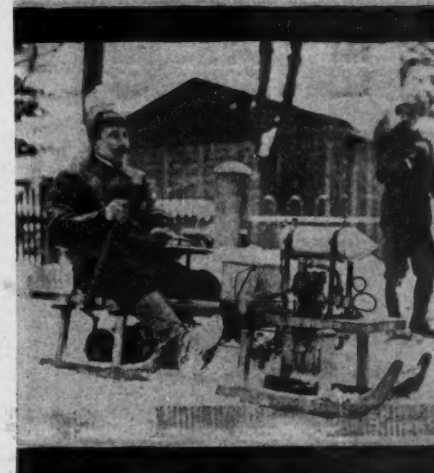
Development of Windsled

To many it would seem as if the inventors who have taken up the windsled have struck the right keynote—as far as the sport is concerned, anyway. They have realized that the demand for speed on the ice is so great that no longer can

the old-fashioned ice boat furnish it. Therefore, they have put runners on light frames and use the motor to furnish the power to turn the huge propeller which is fastened in the rear. Considerable ingenuity is displayed along these lines and from different parts of the country there come reports of devices that seem to mark milestones in the path to perfection along these lines. The effort to produce something practical is not confined to mechanics. Youngsters who cannot afford motor cars have secured old engines which they have adapted to the windsled; rich men who possibly have tired of the motor car, have spent their money along these lines and it would seem as if another winter would see big fleets of these sleds in operation on the inland lakes.

Probably it was Henry Ford who first brought out the possibilities of the motor on the ice. Mr. Ford in a six-cylinder of

his own construction traveled a mile over the ice on Lake St. Clair, near Detroit, in :39, which was considered a remarkable performance at that time. Now the testers from the Detroit factories make a playground of Lake St. Clair and races with ice boats in which the motor cars often beat their rivals, are matters of daily occurrence in winter time.



A RAMBLER WIND WAGON THAT RUNS FAST ON THE ROAD

A REO WITH FRONT RUNNERS AND AN AUSTRIAN IDEA



DETROIT TESTERS AND ICE YACHTSMEN ENJOY WINTER ON LAKE ST. CLAIR

In this country it is more than likely that the windsleds that have attracted the most attention the past winter are the Overland and the Franklin, the latter the idea of C. S. Palmer of Saranac Lake, N. Y., who took a 1909 Franklin six-cylinder engine and used it as a power plant. An idea of the power of this rig may be had when it is known that it has traveled on the ice through $1\frac{1}{2}$ inches of snow at the rate of 70 miles an hour. The only bit of wood is found in the propeller. The main frame is 23 feet in length, made of 3-inch channel steel. The front sled is 3 by 2 by $\frac{3}{8}$ -inch angle steel, and the front runners are 7 feet long. The frame rests on six springs, and the weight complete with passengers only is 1,400 pounds. This Saranac Lake contraption has been given a thorough tryout and it is declared to be practical. Indeed, Mr. Palmer has hoped of traveling at better than 100 miles an hour when he gets the right conditions.

The Overland Windsled

The Overland idea undoubtedly came from the famous windwagon which that company put out last summer in the way of a novelty. A huge propeller was attached to the rear of an Overland car and

this unique combination was used on the Indianapolis speedway and at various track meets. While it did not develop anything at all startling in the way of speed, it proved to be a novelty that took with the public. Having served its purpose last summer, its owners changed it about when snow came along. The propeller idea was retained but instead of a motor car chassis a light frame was made to which was attached an Overland motor. In looks the idea seems a successful one. The Overland wind roadster is driven entirely by the wind resistance created by the revolving propeller shaft in the rear. The differential is not connected with the drive shaft. In fact there is no drive shaft, as a chain combination connects the motor and the 8-foot wooden aeroplane propeller in the rear. There only is a 6-inch clearance between the wooden propeller and the ice.

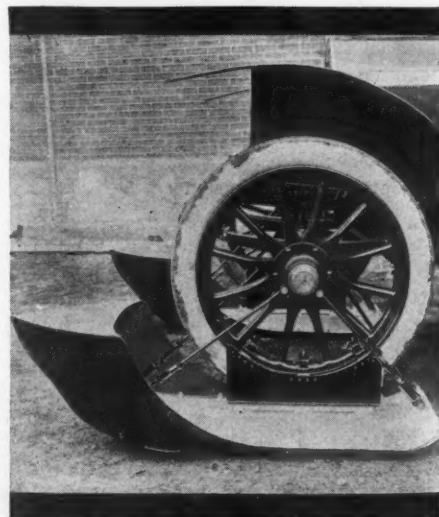
C. J. Swain of Philadelphia, a well known motorist in the Quaker city, is one of the recent converts, and there just has been built for him a motor sled which uses a propeller and which is driven by a Watertown marine motor. It was built in the machine shop of the Shelly Tool Co. at Saranac Lake. The frame is 14 feet

long, 3 feet 1 inch wide and is 13 inches above the ice. It is built of $\frac{1}{4}$ -inch angle iron, reinforced along the sides by $\frac{1}{2}$ -inch steel strips. The frame is supported by truss rods. The sleds are patterned after the ordinary bobsled, and are made of wood, reinforced on both sides by a $\frac{1}{8}$ -inch band steel.

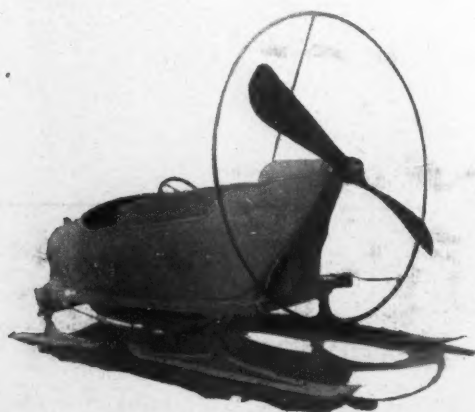
Swain Sled Details

A 36-horsepower four-cylinder two-cycle motor furnishes the power. Two systems of ignition are used, both independent, one being at Atwater Kent unisarker and the other a vibrating coil system. Lubrication is by means of oil with the gasoline for the piston rods and connecting rods, and non-fluid oil in grease cups for the main bearings. Two Schebler carbureters are used. Cooling is by means of an ordinary motor car radiator in connection with the rotary pump on the engine. Wood alcohol is used for cooling purposes.

The motor is started by means of the propeller, which is turned similar to the method employed by aviators. This propeller is a 5-foot aeroplane wheel having a 3-foot pitch. A 7-foot wheel with a 5-foot pitch is held in reserve. The propeller shaft is driven by a chain of sprockets, geared 28 inches on the engine to 15 inches on the shaft. The shaft runs on bronze bearings and has two thrust bearings in front which allow the propeller to



FRENCH IDEA WHICH PUTS RUNNERS ON CAR WHEELS



TWO VIEWS OF MOTOR WINDSLED DESIGNED BY COUNT DE LESSEPS FOR USE IN CANADA

be reversed to stop the sled. The shaft back of the second bearing runs in a stationary tubing to prevent the operator's clothing from being caught. The engine speed is controlled by timer and accelerator from a single bucket seat, while a brake operated by a pedal is attached to the rear sled. The steering is done with the forward sleds.

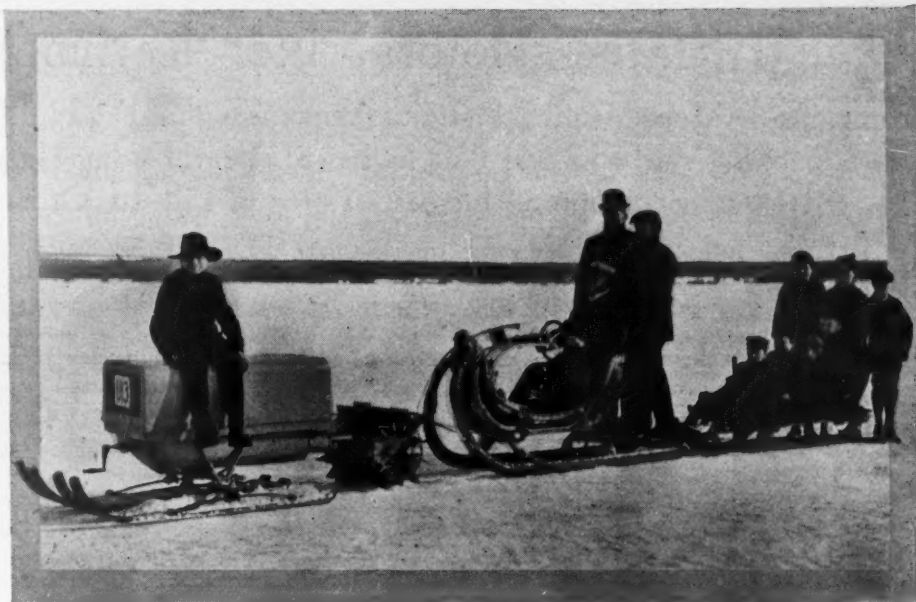
Count de Lesseps' Effort

Count de Lesseps has built for his own use on the frozen lakes and rivers of Canada a propeller-driven sled which is reported to have shown great speed and power on the level, snow-covered stretches of ice in the dominion. The sled is driven by a four-cylinder aeroplane motor and the propeller is geared by a chain and sprockets to the end of the driving shaft so that it will turn 900 revolutions a minute. The forward runners are steered by a wheel the same as the front wheels of a motor car, and there is a marine type reversing gear in the transmission that takes the place of the usual change-speed gearing used in motor cars.

Under the center of the body is a unique brake in the form of a transverse rod in which is fixed a series of string teeth that can be brought down in contact with the snow or ice by means of a lever and rods.

Some Other Ideas

The Franklin, Overland, de Lesseps and Swain machines are essentially windsleds



UNIQUE FRENCH MOTOR TRACTOR USED TO HAUL SLEDGES

but there are other ideas which differ somewhat in the application in that runners are placed in front and the rear wheels retained for power-making purposes. One of these is the result of the inventive ideas of C. H. Smith of Rockford, Ill., who placed front runners on his Ford. This is a convertible idea, Mr. Smith removing the front tires and substituting runners of channel steel which are fastened on by a bolt through the valve hole of the rim. The wheel is wedged both front and rear to keep it from revolving, and there is a $\frac{3}{8}$ -inch rod running from the front end of the runner over the rim and fastened to the rear end of the runner with a nut. The rear wheels are chained.

Still another home-made affair is the work of W. A. Forsyth and R. J. Burr of Standish, Mich., who took a model 10 Buick engine and fitted it to a motor sled, using a propeller in the rear.

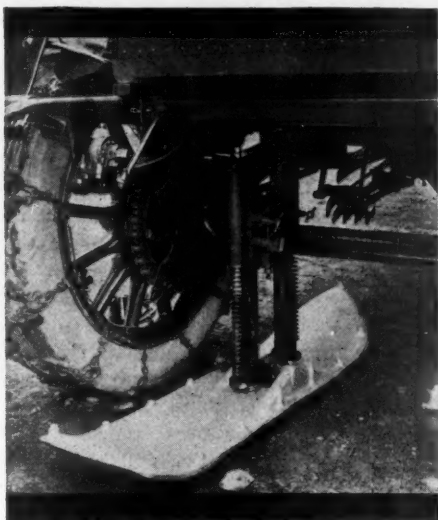
Another Angle in France

In France there are inventors who have turned out a device that is intended for use in connection with the regulation motor car—runners which are attached to the front wheels and runners which are fastened to the rear axle, the idea being to permit the car being slid along on the snow. Two sets of tires are fitted to the

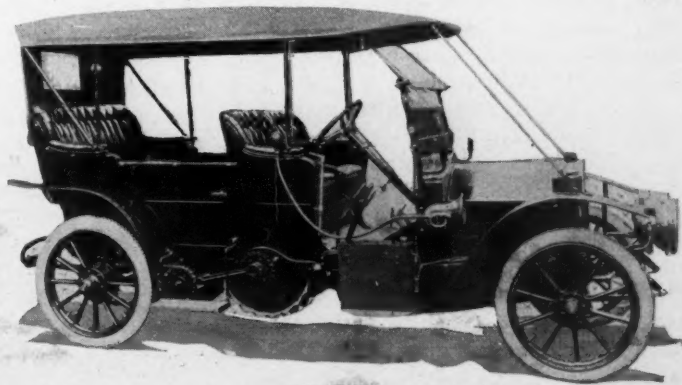
rear wheels and being heavily chained, power is obtained in this manner. The front runners are pointed like the prow of a boat in order that the rig may push its way through deep snow readily. The rear runners are slightly different in construction, not being called upon to break the going so much as are the front ones.

Another French idea has runners front and rear, replacing the ordinary wheels. The power is secured by means of a huge helicoidal wheel at the side of the car which secures its power from the motor by means of chains and sprockets and which propel the car by digging into the snow or dirt.

So far as practical purpose goes, it would seem as if these last mentioned ideas could be advantageously used in this country, especially in those sections of Canada and New England where there are rigorous winters and where there are no such things as roads in winter time. If the country doctor, for instance, could equip his car with some such device that would make progress through the snow easy he could run his car the year round and there would be no such thing as calling on the farmers for tows when the cars are stuck in the snow. Eventually, it is predicted, some such device will be perfected and will be put into service in this country.



REAR VIEW OF FRENCH DEVICE SHOWING FASTENING



CONVERTIBLE CAR USED IN FRANCE, WHICH IS PROPELLED BY HUGE SPUR WHEEL IN SNOW

United States Motors' Net Earnings

Benjamin Briscoe, Visiting Detroit, Announces that Big Holding Company Made \$2,641,050 in Fiscal Year Ending July 31, 1910—Alden Sampson Increases Force to Fill Its Orders

DETROIT, MICH., March 20—Net earnings of the United States Motor Co. for the fiscal year ending July 31, 1910, were \$2,641,050. The annual report was made public Saturday by Benjamin Briscoe, president of the company, who is here on a tour of inspection of the various properties owned by the company in this city.

Mr. Briscoe stated that the sales of the companies controlled by the United States Motor Co., for the year, showed an increase of more than 20 per cent over the sales of the preceding year. He added:

"The establishment of new selling companies, the increase in the number of dealers, arrangement for further extension of our export trade and the number of contracts already closed with dealers insure a healthy growth in the volume of sales during the current year.

The Briscoe Policy

"I attribute this showing to the policy we have adopted: 'Be right.' We are not established to sell our goods at an enormous profit and then quit when we have cleaned up. We are in business to stay. We believe profits in the motor industry should be fair, just as in other lines of business. We are working to put the motor car and the motor truck on a firm basis, for both now are regarded as necessities. We seek to gain the confidence of the buyer and to retain his faith in us. I believe it is better to have a reputation and no profits than profits and no reputation. This name for character can be maintained by building vehicles that bring repeat orders."

Among the more conspicuous items in the report are the following: Total assets, \$30,119,594; preferred stock, \$10,057,100; common stock, \$10,810,000; accounts payable, \$2,514,792; notes payable, \$2,531,269; profit and loss surplus, \$2,382,330; depreciation of plants reserve, \$710,135.

United States Motor Profits

The assets are made up as follows: Land, buildings, machinery, etc., \$7,120,168; patents, contracts and trade names, \$10,810,775; inventory at cost, \$6,549,535; accounts receivable, \$2,580,270; cash on hand and in banks, \$1,331,846.

The companies affiliated with the United States Motor Co. are the Maxwell-Briscoe Co., the Columbia Motor Car Co., the Alden Sampson Mfg. Co., the Dayton Motor Car Co., the Courier Car Co., the Gray Motor Co., the Brush Runabout Co., the Briscoe Mfg. Co. and the Providence Engineering Works.

It has been found necessary to greatly increase the force at the plant of the Alden Sampson Mfg. Co. in order to keep pace with demands. The works are now

running night and day. Each of the main night and day shifts comprises 500 men, who are building and assembling freight and light delivery motors. A separate group is engaged in assembling the Sampson 35 touring car. All the parts except the tires are made in the company's own shops.

Looking for Factory Help

Several other Detroit plants are materially adding to their working forces. The Packard Motor Car Co. is advertising for lathe hands, tool makers and shaper hands. The Ford wants at once crankshaft grinders, lathe hands, carpenters, solderers, bench hands and patternmakers. Body makers are in demand at the C. R. Willson Body Co.'s plant, and the Oakland Motor Car Co., of Pontiac, needs color and brush hands. All of which indicates renewed activity in practically every branch of the industry. The sales forces are busy generally and the daily shipments of cars are steadily increasing.

Odds and Ends of Gossip

W. C. Anderson, president of the Anderson Electric Car Co., of this city, has gone to New York to attend a meeting of the stockholders for the purpose of incorporating a separate company under the laws of New York state. This has been found expedient on account of the rapid expansion of the business in the east. Mr. Anderson will also head the new company.

M. A. Weissenburger has gone to New York to become district manager for the Regal Motor Car Co. He will have his headquarters at Broadway and Fifty-second street, adjoining the Regal warehouse in that city.

The Chalmers Motor Co. has leased a store in the new Dodge power building on Jefferson avenue for its factory branch. The salesroom is roomy and light and there is space for the exhibition of more than a dozen cars. Motor car service will be maintained between the factory and the branch, regular trips being made daily at 10 a. m. and 2 p. m., for the benefit of customers. A corps of guides will be maintained for the purpose of showing visitors through the plant.

MORE SPACE FOR CHICAGO SHOW

New York, March 18—So many concerns have already asked for reservation of space at the next Chicago show that there is sufficient evidence, even at this early date, that there again will be a shortage of space unless some extraordinary method is adopted to provide for the demand. No reservations are made in advance of the first allotment, which gen-

erally takes place the first Wednesday in October, but when the new diagrams are issued early in September they probably will indicate an addition of about 20,000 feet of space.

Some time ago the management endeavored to obtain from the Coliseum company and its architect the right to swing a gallery from the girders. This permission was refused on the ground that the weight to be placed on the platform would be so great as to entail considerable danger. The entire floor of the Coliseum is supported on concrete. The management, therefore, is figuring on the erection of a balcony 29 feet in depth running around the Coliseum, supported from below. If erected, it will be on a level with the bottom of the present gallery and 10 feet below the platform heretofore used for accessories. This will afford, above the main floor, two rows of spaces for accessories, each row about 11 feet deep, with a 7-foot aisle between them. In that event the upper gallery, heretofore used for accessories, will be occupied by motor cars.

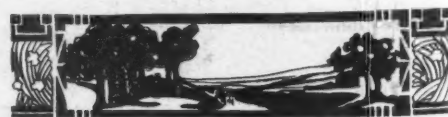
An architect is at present at work on the matter. If he is successful in preparing a design which will not seriously affect the main floor the management is hopeful it will be able to get along without using the Coliseum basement. It is probable that the First Regiment armory will be used for both weeks of next year's show.

MOVING OVERLAND TO TOLEDO

Toledo, O., March 18—Announcement was made this week that the Indianapolis plant of the Willys-Overland Co. will be removed to Toledo this spring. Indianapolis and Detroit parties have bought the Fifteenth street plant in Indianapolis, which heretofore has manufactured the motors for the cars assembled in that city, and will continue the manufacture of motors for other concerns, but all Overland motors hereafter will be made in Toledo. The Drover street plant at West Indianapolis, which has been known as the Overland Automobile Co., will be devoted exclusively to the manufacture and assembling of Marion cars in new models.

In order to accommodate the addition, which will bring employment to about 1,700 more workmen, one of the largest individual factory buildings in the country will be erected at once. The structure will be 520 feet long, 100 feet wide, and three stories high, with basement under the entire building. The company is incorporated for \$6,000,000 and its output is about 15,000 cars annually.

In a statement issued by the company Mr. Willys says that these changes are brought about purely in line with econ-



omy; that some inconvenience has been experienced in having Overlands assembled at different places. It therefore has been decided to have the entire Overland business at Toledo.

DECISION IN STEPNEY CASE

London, March 10—An interesting decision has been rendered here in the matter of the Stepney Spare Motor Wheel Limited vs. Hall. The Stepney spare wheel was the subject of the case. The Stepney company on October 27, 1909, applied under section 21 of the patents and design act 1907, for leave to amend its original specifications. On November 30, 1909, the Stepney company having threatened the Hall interests, the latter issued a writ against them in a threat action.

In that action a motion for injunction came before the court on December 16, 1909, and the same day the writ in the present action by the plaintiffs was issued. On January 22, 1910, the plaintiffs' amendment of their specification was granted. The writ in this action therefore was issued after the application to amend the specification but before the actual amendment, and the question raised by the defendant's objection was whether the plaintiffs could rely upon the amended specification as the document which described the invention for which the patent was granted and which the plaintiffs said had been infringed.

The case was tried before Justice Warrington, who held that the plaintiffs had the right to proceed on their amended specification, with the result that the defendant's defense alleging want of novelty in the invention, and anticipation of it by previous specifications, and, more especially, his allegation that the invention was not the proper subject matter of a patent, failed.

TALKS ON FINDLAY MERGER

Lockport, N. Y., March 20—The American Motor Truck Co. makes the following announcement concerning the consolidation of the American Motor Truck Co., the Lockport Stamping Co. and the Findlay Motor Co. and the proposed removal to Findlay, O.:

"The executive offices of the consolidated concerns will be at the Findlay plant, but the business of the American Motor Truck Co. will be run under the same name and management as heretofore. L. E. Ewing, president of the Findlay Motor Co., has been elected president of the American Motor Truck Co. to succeed Charles R. Bishop, resigned. E. B. Olmsted remains the vice-president and general manager of the company. The other officers are unchanged."



Boston Considers a November Show

Some of the Dealers in Hub Argue that March Affair Comes Too Late To Do Them Much Good and Urge a Fall Display—Certainty that the Trucks Will Be in Separate Exhibition

BOSTON, MASS., March 20—There is talk in Boston now of changing the date of the annual motor show and no doubt the matter will be given some consideration at the next meeting of the Boston Automobile Dealers' Association, under whose auspices it is held. Some of the dealers believe that a show in November would better suit them than one in March. Their argument is that when the March show comes around they have practically sold their output and in a few weeks will be exhibiting their next year's models. In some instances they have to get additional cars to fill the demand after the show. On the other hand, there are dealers who say March is the real month because at that time people flock to Boston ready to buy. They say a show in November would bring people to Boston, but that they would not place their orders because there would be the intervening months when they could not use the machines and they would not care to have the money tied up. The March show is a general cleaning up of everything at a time when it is needed, they say, for then people come to Boston and knowing they can start motoring shortly after buying they are more disposed to purchase, when if left alone without the show they would keep putting it off and finally change their minds. There is some merit in the arguments of both, but it is not believed that a change will be made just yet.

Truck Situation in Boston

Then there is the truck situation. Boston is sure to have a truck show separate from pleasure cars in the future. Here again there is some diversity of opinion, as some believe it should be held before the pleasure car show and others after. And some believe that a truck show at least should be held in the fall, basing their reason on the argument that merchants would buy more readily when they figured that with winter coming on and business getting heavy, trucks would be more necessary than in summer when receipts fall off and they would not need so many. The two propositions are debatable and the matter will be threshed out fully before long. It may be that the city will see two shows in future, one in the fall and one in the spring. If that is so Boston will have the honor of leading the show field and being the first to display the new models.

All Pleased with Show

The Boston dealers are just getting rested after the strenuous week at the show and some of them are taking vacations by visiting the factories. They all

report an unprecedented amount of business. The show was responsible for at least 500 sales of cars, according to one of the officials of the dealers' association who is in touch with the situation. This number does not include those that will be sold before this month is over. The trucks, too, did a fine business. One of the men connected with a western factory, who was here with a truck, it being the first time his firm had put out a commercial vehicle, was amazed at the business.

Business at Boston Show


"At New York and Chicago we got prospects," he said, "at Boston we got orders. And I know some of the other factory men fared the same way. We did not expect them, I am frank to say, as we expected to have to give demonstrations, but instead of that men came in, and after looking over the products, picked out what they wanted. When it is considered that New York and Chicago with their separate truck shows had an advantage over Boston, where the vehicles were crowded into the basement, it shows that there is a great future for the commercial vehicle."

According to an announcement sent out by O. D. Corbett, Fall River, Mass., has been put on the motor show circuit. The event, which is to be known as the Bristol county show, will be housed in Music hall, one of the largest halls in the city, from April 3 to 8, inclusive.

FOUR-LEAF CLOVER RUN

Washington, D. C., March 18—A four-leaf clover endurance run is being planned by the Automobile Club of Washington. It will take place May 16-19 and each day's run will be to some point within 100 miles of Washington, the finish each night being in this city. The tentative routes selected will make the tour about 700 miles in extent. It will be under grade 3 rules of the A. A. A. The indications are there will be about thirty cars entered. The details of the run are being arranged by T. S. Johnston, captain of the club.

The club is also planning a hill-climb, to take place June 15. On the following day there will be a floral parade and carnival in honor of the Glidden tourists, who will be in Washington at that time planning for the start of the Glidden tour, scheduled for June 19. Various other forms of entertainment will be arranged for the Gliddenites under the direction of a strong committee appointed by the board of governors of the club at a recent meeting.



MOTOR AGE
Published Weekly by
THE CLASS JOURNAL COMPANY
1200 MICHIGAN AVENUE, CHICAGO

NEW YORK OFFICE
239 West 39th Street

Entered as Second-Class Matter September 19, 1892, at the Postoffice at Chicago, Illinois, under Act of March 3, 1879

SUBSCRIPTION RATES
United States and Mexico
\$3.00 per Year
Other Countries including
Canada \$5.00

Stock Car Value

ONCE more has Europe been heard from in the matter of the stock car; this time it is Germany that has spoken and there is no doubting the meaning. German car builders are tired of the special-car-building for racing purposes. For years they have been building cars of special cylinder sizes to meet this or that race; for years they have been building special types for the big tours, like the Prince Henry, etc., and every time it has cost a lot of money. But these Germans would not object to the cost if the returns were forthcoming, but the facts are that the populace has begun to think that because a special firm can build good racing cars does not mean that that firm always builds good pleasure cars. In other words, the German buyer wants to see the stock car race and not the special racing machine. To go still further, the German maker has at last realized this and has come out with a general announcement that he is ready to enter all good stock car competitions, which competitions are advertised as such and which are in reality such.

THE stand taken by America in calling for stock car events a few years ago was laughed at by many on the ground that stock cars would not be able to stand up or endure a long-distance race and that they would not be able to go fast enough to interest the public. Both of these threadbare arguments have been riddled. The stock car has stood up when the specially built car has gone to pieces. The stock car has beaten the more powerful specially built machines in the big road races; and further, the buying public is beginning to believe that the stock car is a legitimate stock car, and when it is advertised that a stock car race is to be held that they will see a real stock car event and not a race among special speed creations that some wily makers have slipped past the technical committee.

ALTHOUGH stock cars were rigidly defined last year, they will be defined with still greater restrictions this year. A year ago there were many options on carbureters and magnetos allowed which were in not a few cases questionable. For the coming season these restrictions have been eliminated and the spectator will see in a stock car event an exact duplicate of what he can buy at any salesroom. It takes a long time to convince the public of a certain fact and the conviction on the real stock car status has been a herculean task because there have been many false advertisements in which it was stated that stock cars competed, whereas the actual cars were anything but stock cars. The great buying public is protected now because a stock car must be registered with the contest committee of the American Automobile Association at least thirty days in advance of the meet, and whenever such car competes its specifications have to be checked up with the registered sheets by a competent technical committee. The net result is that when a stock car race or contest is held it will be a stock car event and nothing else.

IT WAS argued by the enthusiasts of the special racing machines that interest would lag in stock car events and that real racing would be killed. As a matter of fact, the interest in stock car events is greater than in any other kinds because the owners of cars, of the same make as those entered in the contests, are anxious to see how the same model as they own performs when tuned up to the minute.

The American System

AN AMERICAN abroad in comparing the American car with the European one made the statement that "Europeans cannot make cars as cheaply as Americans, in spite of the fact that in America labor is twice as high as in Europe." Charles Y. Knight, who was responsible for this remark, went still further and added what might be termed an explanatory statement, namely, that "Americans do not spend much time in research, but visit the factories of Europe in great numbers and largely imitate the designs of the European shop." The second statement explains the first one. The reason that the American builder can produce a lower-priced machine than the continental builder is that he is adept in the field of multi-machinery; that is, those machines capable of turning out parts at an enormously high rate of speed and producing all of these parts alike. In America many makers turn out but a single model, some two and some three. It used to be that some companies turned out over a dozen, but where there were so many models it was soon realized that it was impossible to compete with the company turning out a single one.

EUROPEAN factories are today turning out many models, some of them ten and some of them twenty. They have to do it in order to sell enough cars to keep in business. This is due to their limited selling field, as compared with the vast continental territory of this country and Canada, that the American maker has at his threshold. Where several models are built the factory energies are divided into as many parts and the productive value of the artisan reduced. The result is higher prices without any better quality.

AT PRESENT the trend in America is to reduce the number of models. The days of seven or ten models are apparently over unless a turn comes and the maker will have to build more models in order to continue to keep his factory in healthy operation. It is a fact today that, generally speaking, the factories with greatest stability are those with fewest models, rarely over three, whereas some of the concerns that are reported to be in financial worry have been building ten or more and giving everything in the way of options. It stands to reason that a one-model factory is the ideal one, providing there is a big enough selling field for a car of that particular price. Here comes the rub: Excepting in the case of one or two makers, there does not seem to be many of such. There is not enough demand for a car selling at over \$5,000 to warrant one factory devoting all of its energies to such a car; it is questionable if there is room for a factory building nothing but \$2,500 cars, unless the output is relatively small. This particular condition has brought about the two or three-model factory in which two or three entirely different models in the matter of price are built.

IT LOOKS as if the three-model factory will be the leader in popularity. It allows of economic manufacture and it also allows of economic selling. The dealer in the large city must have three different prices if he is to reach his greatest field of usefulness. It costs just as much to maintain an expensive retailing salesroom for one model as it does for three. It is true that one model helps to sell another and that if an owner buys the lowest-priced model he will in another year be in the market for a higher-priced one.

Europe Clamoring for the Stock Car

PARIS, March 6—A German motor car manufacturer of prominence during a recent visit to this city talked interestingly about the European racing question. Being a member of the sports committee of an important continental club, this German motorist is pretty well informed. Speaking of the situation in Germany the manufacturer said in part:

"Practically all the manufacturers of motor cars in Germany are decidedly opposed to road races or any other sort of contests which will require the building of special cars. Most of us believe that in Europe at least the general public no longer is guided in its buying of cars by the result of a race or races where specially designed cars compete. Quite different it is with contests in which regular stock cars are the contestants. Such events are not only welcome but they are still needed, and the German makers will no doubt enter in respectable number in any important contest that might be promoted.

German Stock Cars

"During the last few years we have built cars to meet the requirements of the annual big German tour, the Prince Henry. This year we are making cars to suit the rules for the Anglo-German tour. Now these cars, we believe, are, strictly speaking, stock cars, and if there are important events in neighboring countries in which these cars may be entered I believe quite a number of them will be nominated. These cars, I might say, are considered standard models for the year.

"I think that this year only one important German concern, Benz & Co., will take part in road races, and it will be with the same cars the concern had in 1910. The Daimler Motoren Gesellschaft some time ago announced that it would not again enter the racing game, and I am informed that the directors have so advised the promoters of the French and Italian grand prix races. If Mercedes racing cars are entered in races it will be by private owners, and without the assistance of the manufacturers of the cars. Other leading concerns like Adler, Horch, N. A. G., and Protos are almost always ready to enter their regular touring or stock cars in important events, but they will not hear about racing cars.

Situation in Austria.

"In Austria the only important concern, the Austrian Daimler, also is strongly opposed to racing. In Belgium I found the situation about like in our country. No important concern wants to hear about road races, but tours or reliability trials, in which their current made cars could be entered, are quite welcome.

"In Italy the manufacturers seem to be unanimously opposed to the idea of mak-

German Maker Declares Foreign Trade Will Not Support Contests In Which Specially-Built Machines Can Compete

ing racing cars. Stock car races are favored by the majority, while reliability trials do not seem to impress the Italian manufacturers as being a very important test for a motor car.

"In France, where the sport flourished as in no other country until a few years ago, there seems to be little hope of having the racing question revived. There are a few concerns, mostly of recent birth, which favor races. I understand, however, that all the manufacturers who are members of the French Automobile Manufacturers' Syndicate are pledged not to take part in any race or races not sanctioned by the syndicate. As four-fifths of the manufacturers of France belong to the association, it seems that there is little chance for any road race of consequence being held in that country.

"Now it must be well understood that these remarks concern only the big racing cars and by no means light cars or small cars or voitures. Races for the lighter or smaller kind of motor cars are not only welcome by many in the industry but they are needed to popularize those cars. Meetings like those of Ostend, Boulogne and Gaillon are still of much worth to the

manufacturers. The majority, even often more than three-quarters of the cars starting at those meetings, are stock cars, and for that reason the general public takes still much interest in them and will continue to do so.

"It cannot be denied, everything considered, that since the Bennett cup race no international contest, be it the French grand prix or the Herkomer and Prince Henry tours, or any other, have been able to command the widespread interest of both the industry and the public. Some event ought to be promoted, some kind of contest which would be acceptable to the manufacturers of motor cars on both sides of the Atlantic and which would make it possible to arrange a real international competition, to be held annually. It must not be a race, and speed should even be a very minor factor in that event. It should, however, be so severe a test that it could not be called a simple pleasure tour.

Hints at Big Contest

"Unless it be a contest of a serious purpose, with the object of determining which is the best car, it would have no reason to be. Will it ever come to that? I dare not say yes, but I hope and I even think that several leading sportsmen in Germany and France have for some time been talking the matter over. A prize or trophy of much value will be offered and it will be the most valuable ever given, but, of course, it is conditional upon the matter maturing."

COMING MOTORING EVENTS THAT ARE SCHEDULED FOR THE YEAR

- March 18-25—Show at Montreal, Quebec.
- March 25-April 1—Show of Pittsburg Automobile Dealers' Association, Pittsburg, Pa.
- March 27-30—Florida beach races, Jacksonville Motor Club, Jacksonville, Fla.
- April 4-8—Commercial Car Automobile Dealers' Association show of Pittsburg, Pa.
- April 8-9—Twenty-four-hour race, Los Angeles motordrome.
- April 15—Motor Truck Club's commercial vehicle parade, New York City.
- April 12-15—Show at Sioux Falls, S. D.
- April 16-23—Show in Prague, Austria.
- April 22—Redlands annual hill-climb, Redlands, Cal.
- April 23-28—Touring car contests in Modena, Italy.
- April 29—Quaker City fourth annual social run, Quaker City Motor Club.
- May 7—Targa Florio road race, Italy.
- May 14—Cataluna cup road race, Spain.
- May 16-19—Four-leaf clover endurance run of Automobile Club of Washington, D. C.
- May 19-25—Glidden tour from Washington, D. C., to Ottawa, Canada.
- May 21—Hill-climb, Limonest, France.
- May 21—Ries hill-climb, Austria.
- May 25 or 28—Meuse hill-climb, Belgium.
- May 25—Touring car kilometer speed trials, Le Mans, France.
- May 25—Fuel economy test, Chicago Motor Club.
- May 27-31—Five-day tour to Indianapolis of Chicago Automobile Club.
- May 28—Hill-climb, touring cars, Le Mans, France.
- May 28—Touring car reliability trials in Germany.
- May 29-31—Tour to Indianapolis of Chicago Motor Club.
- May 30—Five-hundred-mile International sweepstakes race, Indianapolis motor speedway.
- June 1—Speed trials, Bucarest, Roumania.
- June 4—Hill-climb, Trieste, Australia.
- June 18—Voiturette and light-car road races, France.
- June 22—Algonquin hill-climb, Chicago Motor Club.
- June 25—Grand prix of Automobile Club of France.
- June 25-July 2—Endurance contest, Denmark.
- July 4-20—Prince Henry tour.
- July 9—Mount Cenis hill-climb, Italy.
- July 13-20—Ostend week, Belgium.
- July 19-29—Motor truck run, New York to Chicago, Chicago Motor Club.
- July 21-24—Meeting at Boulogne-sur-Mer, France.
- August 6—Mount Ventoux hill-climb, France.
- August 25-26—National stock chassis road races, Chicago Motor Club, Elgin, Ill.
- September 2-11—Agricultural motor vehicle show, Roubaix, France.
- September 9—Grand prix of Italy, at Boulogne, Italy.
- September 10-20—Voiturette and small-car trials in Hungary.
- September 16—Touring car competition, St. Petersburg-Sebastopol, Russia.
- September 17—Semmering hill-climb, Austria.
- September 17—Start of trials of l'Auto, France.
- October 1—Gaillon hill-climb, France.
- October 9-13—One-thousand-mile reliability run, Chicago Motor Club.

Sixty May Start in French Road Race

Light-Car Event at Boulogne Already Has Eighteen Nominations and Many More are Promised—Crack Drivers in Great Demand—Difficult in Handling the Big Field Is Expected

PARIS, March 6—Indications are that it will be possible to secure sixty racers for the French light-car event to be run on the Boulogne-sur-Mer course on Sunday, June 25. At the present time there are eighteen paid entries, the cars being four Peugeots, four Gregoires, four Excelsiors, three Arrol-Johnstons and three Alcyons. To these will be added later Hispano-Suiza, Rolland-Pilain, Bayard-Clement, Vauxhall, Argyll, Fiat, Benz, Delage, Calthorpe, Lancia, Piccard-Pictet, Motobloc, Cottin-Desgouttes, Opel and Adler. In all probability the race will unite a greater number of entries and be more keenly contested than any event in France for the last 4 or 5 years. Arrangements have been made to run the race in series, if necessary, two groups of thirty starting, with the first fifteen in each group to compete for the final.

Good Drivers in Demand

An indication of the keenness of manufacturers for this race is shown by the fact that every effort is being made to get the best drivers, and as most of the big French firms gave up racing nearly 3 years ago, and have not retained the services of their crack drivers, these men are available for the many new or younger firms intending to take part in the Boulogne race. Thus, Alcyon has secured the services of Louis Wagner, a Vanderbilt cup winner, and for a long time race driver with Darracq and Fiat. His companions will be Barriaux, who has figured in a few big races, but never with any great prominence, and Page, an Englishman, who has handled racing cars for almost 15 years. Lion-Peugeot sticks to its original team of Boillot and Goux, with the addition of Zuccarelli, the Spaniard who won last year's voiturette race, and has still one position open. Gregoire retains De Marne, its head tester, and probably will complete the team with three leading cracks. Excelsior, a Belgian firm, has secured Riviere, an old cyclist, motor cyclist and race driver; Christiaens, formerly a Vivinus driver, now an aeroplane pilot in the far east, and Rigal, one of the members of the old Bayard-Clement team.

Hint at Special Cars

The race appealed to manufacturers because the only limitations were 3 liters cylinder capacity, which would just admit the popular type of car having a bore and stroke of about $3\frac{1}{4}$ by 5 inches. But competition is likely to be so keen that manufacturers are asking themselves if it is wise to put in their standard models when these are but slightly below the maximum cylinder area allowed. One firm, for instance, having a standard model 2.7 by 6.6,

which gives about 2.6 liters, is almost convinced that it will be necessary to build a special motor with such increase of bore as will give the full 3 liters. Lion-Peugeot, the single and twin-cylinder specialist, has just decided to add a four-cylinder series to its line, and will see to it that these have the full 3 liters capacity. Probably the cylinders will measure 2.9 by 6.7 inches.

Gregoire has a standard model of 3.1 by 6.2 bore and stroke, which is too big to compete. The makers will make it fit by cutting down the stroke to 5.9 inches. The Excelsior standard models measure 3.3 by 5.1, which probably will be retained, for they just fit in the limits. It is interesting to note that although the race is held under cylinder volume rules, it is the long-stroke motor which is favored. Only a few years ago such rules would have brought forth a set of square motors. Now manufacturers are convinced that although volume only is considered, it is advantageous to build with a long stroke.

Changing the Course

The starting and finishing point and about one-half of the course are the same as for the last two voiturette races. But in view of the larger number of entries promised it has been necessary to make some changes to eliminate the narrower roads. To avoid the town of Desvres a cut is being made by widening and macadamizing a forest road. The course comprises two absolute straightaways over 6 miles in length, as well as a portion of very hilly, winding road, and is probably one of the best combinations that could be found, for it allows unlimited speed and at the same time tests cars and drivers on the hills and bends.

TO TOUR TO INDIANAPOLIS

Chicago, March 18—The Indianapolis speedway meet of May 30 undoubtedly will bring about a large attendance from Illinois. The Chicago Motor Club is not the only one in the state that is arranging a tour to the Hoosier metropolis for that big event, for the Chicago Automobile Club this week announced that its runs and tours committee will promote a 5-day tour in May which will have for its object attendance at the 500-mile race. The Chicago Automobile Club members will leave here on May 27, stopping at Laporte for the night. The next day they will drive to Indianapolis and on Monday will participate in a 150-mile run through Indiana, returning to Indianapolis that night for the race of Tuesday. On Wednesday they will return home. The Chicago Automobile Club is endeavoring to revive in-

terest in club runs, and already has scheduled four week-end trips which look attractive to the members. Later on in the summer the club will tour to Detroit and back.

ROUTE IS SELECTED

Philadelphia, Pa., March 18—At a meeting of the contest committee of the Quaker City Motor Club, held this week, the route to be followed by the participants in the club's fourth annual social run on Saturday, April 29, was mapped out and A. T. James and G. Hilton Gantert were appointed a committee to visit Atlantic City and choose headquarters. The cars will pass through Camden, Hammononton, New Gretna, Tuckerton, Port Republic, Absecon, Pleasantville and Atlantic City, a distance of approximately 75 miles. Final arrangements and the establishment of checking stations at various points en route will be completed next week. Mayor Reyburn will be invited to be the club's guest and take part in the run.

SWEDEN HOLDS WINTER CONTEST

Stockholm, Feb. 28—This year's annual winter tour or reliability trials of the Swedish Automobile Club were held a few days ago. The result was that a Minerva won first prize in the big car class and a Piccolo was the winner among the small cars. As in former years American cars took part in the trials and again they were among the leaders. A Cadillac won second prize in class 1 and a Ford took third prize in class 2, while an old six-cylinder Frayer-Miller failed to finish. All three of these cars took part in the similar contest last year and the Ford and Frayer-Miller even started in the 1909 trials.

In former years—this was the sixth renewal of the tour—only ten or twelve contestants entered, but this year there were thirty-five entries, due to the fact that among the very first to go in was Prince Wilhelm, second son of King Gustav V. This royal participation brought about the large turnout, quite unexpected, and made the 1911 event a huge success.

There were thirty-three starters, among them Prince Wilhelm in a 45-horsepower Benz, which he drove himself. This year the contestants had to make the run from Gothenburg to Stockholm, about 312 miles. The winner in each class was the contestant who came nearest making the schedule at controls. By special permission from King Gustav V the contestants were permitted to drive during daytime at a rate of 18.6 miles an hour, instead of 15.5, which is the regulation legal limit. At night time the speed permitted was 12.5 miles an hour. Cars of class were those listing at \$1,610 or over and cars of class 2 were those under that price.

For the first time since the trials have been held the roads were almost free from snow. Prince Wilhelm did not get among the prize winners. While he drove

well and showed himself a fine sportsman, he had lots of trouble, due partly to his inexperience in such contests. In addition to the two principal trophies there were prizes donated by the king, members of the royal family, the Automobile Club of France and the Kaiserliche Automobil Club. With such incentives there was keen competition for the trophies. The prince was keenly disappointed because he failed to win one of them.

The winning car, a Minerva, made the route of 312 miles in 22 hours 2 minutes 32 seconds. The Cadillac, second, made the run in 21 hours 48 minutes 30 seconds. A Vivinius was third, a Scania fourth, a Mathis fifth, a Vivinius sixth. All these six cars came through without having lost a point. The seventh car, an Opel, lost only .05 point; the next, a Mathis, 1 point, and the ninth, a Horch, 2 points.

Among the cars in class 2 only one, the winning Piccolo, had a clean score. It made the run in 21 hours, 29 minutes. A Darracq was second, having 2 marks against it, and the Ford, third, lost 5 points.

KLAXON SCORES IN COURTS

New York, March 18—By an agreement entered into by the Lovell-McConnell Mfg. Co., maker of the Klaxon horn, and Joseph W. Jones, maker of the Jones electric horn, and the United Manufacturers, which markets the latter, the litigation over the horn question has been amicably settled. Under this agreement Jones and the United Manufacturers recognize the validity of the Klaxon patents and Jones will discontinue making the Jones horn. The two also agree to the issuance of final decrees and permanent injunctions against them in suits for infringement which have been brought by the Lovell-McConnell people.

Another Klaxon note comes from Philadelphia, where the Lovell-McConnell company brought suit against William P. Young, operating as the National Supply Co., for infringing the registered trade mark, Klaxon. Young was charged with advertising cut prices on a Klaxona horn, which, it was asserted, only was an ordinary buzzer horn. The court thought the addition of the "a" to the Klaxon was an infringement and granted the injunction, restraining Young from using the name in the future when advertising his horn business.

In New York the Klaxon people scored still another victory when a preliminary injunction was granted by Judge Cox in the United States circuit court against the Manhattan Electrical Supply Co. The latter handled the regular licensed Klaxon but also sold a horn of the buzzer type, which is said to be an infringement. The court held that the defendant had no right to sell horns infringing the Klaxon patents while dealing in the licensed Klaxon instrument.

Tetzlaff Breaks Speedway Records

Lozier Star Wins Special 100-Mile Match at Los Angeles From de Palma in Fiat 90, Averaging 81.08 Miles Per Hour for the Century—New Marks Made For 25, 50 and 75 Miles

LOS ANGELES, Cal., March 19—Special telegram—Teddy Tetzlaff, who won the Santa Monica road race at an average speed of 73.22 miles per hour, the American record, today demonstrated that he is equally at home on the track by defeating Ralph de Palma in a special 100-mile match race on the mile board speedway at this city. What's more, Tetzlaff did it decisively, winning by 6½ miles and smashing the American speedway records for 25, 50, 75 and 100 miles. The century time shows an average pace of 81.08 miles per hour, the time being 1:14.29%. Compared with the world's record this is somewhat slower, but when A. Smith in a Thames six-cylinder did 1:06.53.49 on the Brooklands track, equal to 89.79 miles per hour, he was running against the watch, whereas Tetzlaff was in competition, and keen competition at that.

Tetzlaff's new 100-mile record displaces the 1:16.21.90 made by Harroun in the Marmon on the Los Angeles speedway last April. Tetzlaff's 18:22% for 25 miles is better than de Palma's 18:52 made at Los Angeles April 13; his 36:35% for 50 miles cuts de Palma's 37:55.53, also a Los Angeles mark, and his 75-mile mark of 54:50% cuts the 57:15.79 of Harroun in a Marmon at Los Angeles.

Tetzlaff took the lead immediately at the start today, driving his four-cylinder Lozier, in which he smashed the record of Santa Monica, and at 19 miles he had lapped de Palma in the Fiat 90, which he repeated on the twenty-ninth lap, the forty-fifth, the fifty-fourth and ninetyeth. De Palma had to change a tire at the sixty-fifth mile and at the seventy-eighth Tetzlaff had to make a change.

WITH THE GLOBE TROTTERS

Detroit, Mich., March 21—The last mail reports from the Hupmobile world tourists tell of a week's visit in Sydney and a tour through the island of New Zealand. Sydney was the first foreign port at which the tourists have landed. After their visits in Sydney and New Zealand the Hupmobile returned to New South Wales, whence the tourists drove the whole length of the island to Melbourne and then back to Sydney, where they sailed for Manila on March 11. Three Hupmobile enthusiasts with their cars are making the trip across Australia with the tourists. A curious example of the blue laws that are still in force in Australia is noticed by the fact that the world tourists were not allowed to land their car at Brisbane, the first port at which the steamer stopped. The boat arrived there on Sunday and a heavy fine would have been the consequence if

the ship unloaded a car on that day. However, the tourists expect on their return trip across Australia to visit Brisbane, which is also a strong Hupmobile city. The tourists' met with some unwelcome news on their arrival in Australia. Aboard the Parisiana, bound from New York to Australia, were thirty-one Hupmobiles, a part of the monthly shipment to agents in Australia and New Zealand. The Parisiana was wrecked off St. Paul's islands.

ORGANIZE IN BOWLING GREEN

Bowling Green, O., March 20—The Bowling Green Motor Car Co. has organized, and already work has begun on the factory building, the office being fixed up for early occupancy. General Manager S. F. Sawyer has been in Cincinnati, Cleveland and Peru, Ind., buying machinery, and he and C. B. Kurtz of Cleveland have located in Bowling Green to take up active work at the plant.

The officers of the company are: J. B. Wilson, president; S. F. Sawyer, vice-president and general manager; T. J. Miller, secretary; J. W. Underwood, treasurer; executive board, S. F. Sawyer, F. C. Moore and J. B. Wilson. The directors are: S. F. Sawyer, A. C. McDonald, F. Lee Roush, C. B. Kurtz, B. A. Gramm, J. B. Wilson, T. J. Miller, F. C. Moore and J. W. Underwood.

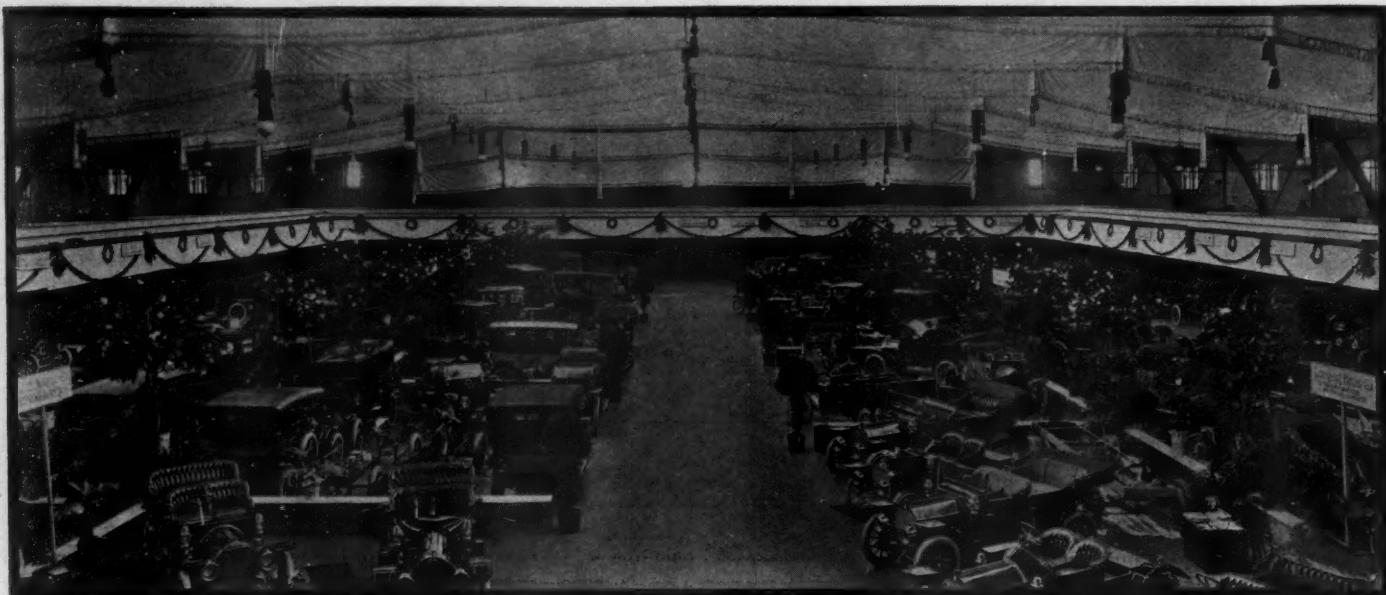
Sixty thousand dollars' worth of stock has been sold and but little more, if any, will be disposed of at the present time, the balance remaining as treasury stock.

PHILADELPHIA CLUB MEETS

Philadelphia, Pa., March 20—About 150 members of the Automobile Club of Philadelphia attended the annual meeting of the club held last week at the Hotel Walton, followed by a vaudeville entertainment and buffet supper. Plans were discussed and a provision made to take in non-resident applications for membership—that is, those residing 30 miles or more from the center of the city. Members' dues were elevated to \$15 per annum. Outside of this, the only other matter of importance was the election of four new directors: Stedman Bent, W. O. Griffith, S. Boyer Davis and W. J. Foss.

VELIE WILL BUILD TRUCKS

Moline, Ill., March 20—The Velie company is to enter into the matter of building trucks. So far plans for a 4-ton vehicle have been perfected. The truck is to be a 40-horsepower type, conforming in general lines with the conventional truck of the present season.



GENERAL VIEW OF DRILL HALL IN WHICH LOUISVILLE SHOW WAS HELD

Syracuse Show Exceeds Expectations

Central New York Gives Third Annual Exhibition Full Support and Affair Surpasses Predecessors in Way of Attendance, Sales and Decorations—Farmers Prominent Among the Buyers

SYRACUSE, N. Y., March 18—The third annual show given by the Automobile Dealers' Association of Syracuse at the state armory in this city, which closed to-night, was a record-breaker from every standpoint. It was an exhibition uniquely successful in the matter of decorations, entertainment, attendance and of sales. Moreover, the sales beat all records, and if signs count for anything, all former high-water marks of purchase of motor vehicles in central New York will be exceeded during 1911.

Last year's show far exceeded the first in extent, but the one which closed today was fully 50 per cent larger than that of 1910. The display of pleasure cars was a notable one, both in the number of vehicles shown and in the richness and general attractiveness of appointment. Among the makes not heretofore shown at a Syracuse show were the Moon, Paterson, Cutting, McIntyre, Moyer, Matheson, Baker electric and Columbia, all on the main floor, while in the basement were seen the Overland, Lyon, Case and Mitchell.

It was distinctly a local show, for Syracuse dealers. Syracuse was a Mecca for agents this week. Practically every one within a radius of 75 miles from the city was in constant attendance through the week, and there were many who paid the show flying trips on the various days, some of them coming from a great distance. The total number of agents visiting the exhibitions, conservatively estimated, will reach into the hundreds. Rochester was here in force, its representatives getting some pointers for their coming show.

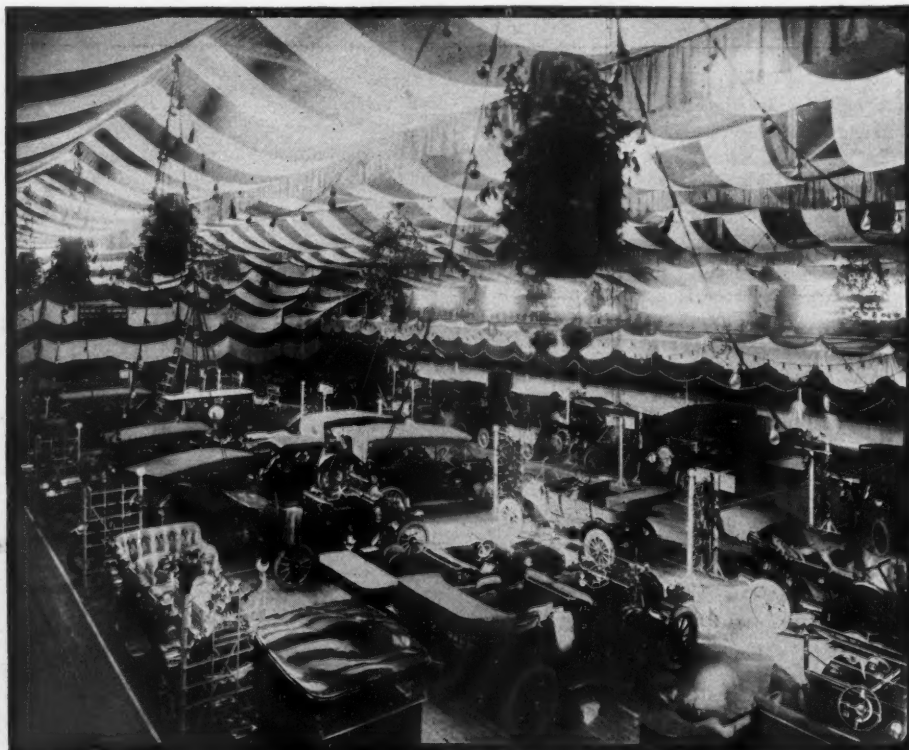
A tour among the agents reveals that the chief demand has been, consistently throughout the week, for a family car of the fore-door type, the popular price ranging around the \$2,000 mark. The trend has been toward conservatism in price, and the inclination, too, has been for conservative rather than extreme types.

Emphatically, farmers have been buying.

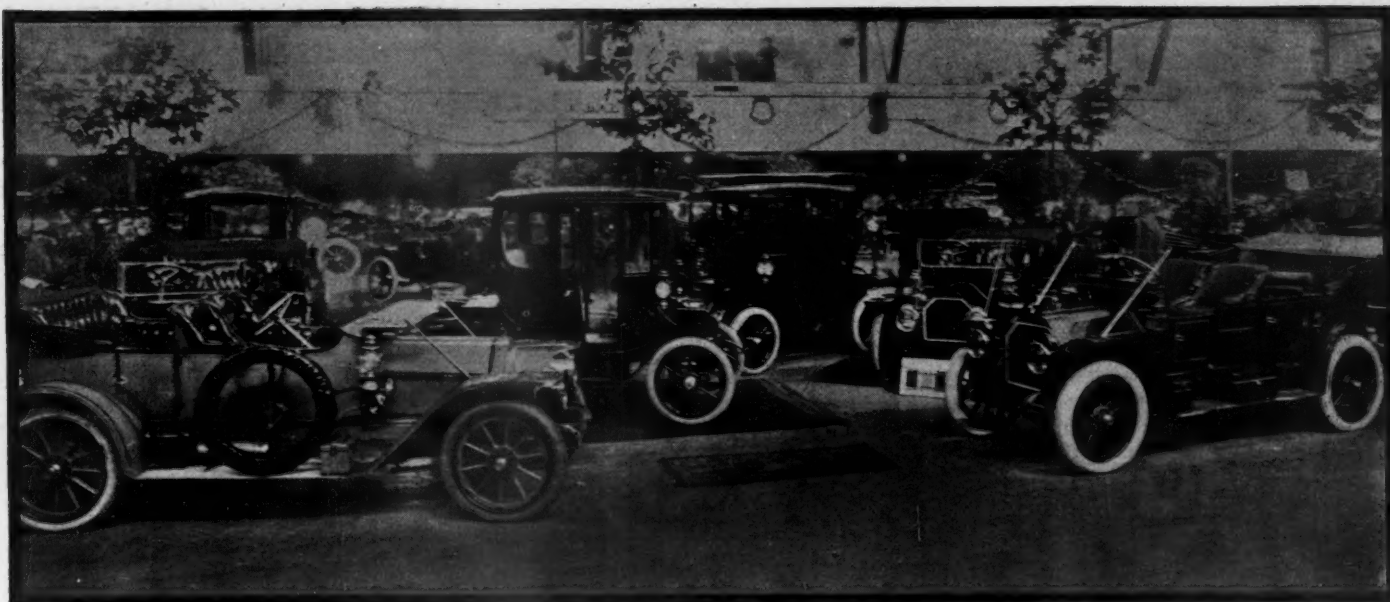
Big delegations of them have been here through the week, from all over central and northern New York, and purchases have been plenty. Most of them have been buying cars costing \$1,000 to \$1,200, mostly of the family type. There has been a big demand from this source for cars of the convertible type. The farmers have been asking for cars from which they could remove the bodies and run in democrat form, upon occasion, as delivery trucks, and the enterprising agents have been fully prepared to meet this demand.

Record Crowd During Week

The show closed at 11 o'clock Saturday night. There were 6,000 in attendance, a record last-day crowd, which made a total



ONE SIDE OF THE RECENT SYRACUSE SHOW



INTERESTING SECTION OF THE RECENT SHOW HELD IN LOUISVILLE

attendance for the week of 30,000, establishing a new record.

Motor cars valued at more than \$150,000 were sold during the week and the sales of accessories amounted to \$25,000. The Syracuse makes of cars, Moyer, Franklin and Chase, had a big week.

The cars which proved the most popular with the buying public during the show were those ranging in price from \$1,500 to \$2,500. However, the agents for high-priced cars report a most successful week, while those who handle cars under \$1,500, especially under \$1,000, runabouts and small touring cars, were on the closing night congratulating themselves when they finished figuring the week's receipts.

Colonels Show Interest in Motors

Fourth Annual Exhibition Held in Louisville Attracts 20,000 Kentuckians in Short Run and 250 Machines Are Sold—Affair Proves Popularity of Car in Mason and Dixon Land

LOUISVILLE, KY., March 19—Amid the blowing of siren horns and the ringing of electric bells, the fourth annual exhibition of the Louisville Automobile Dealers' Association passed into history last night, bringing to a close the biggest and most successful show ever held south of the Mason and Dixon line. The show started Wednesday evening and

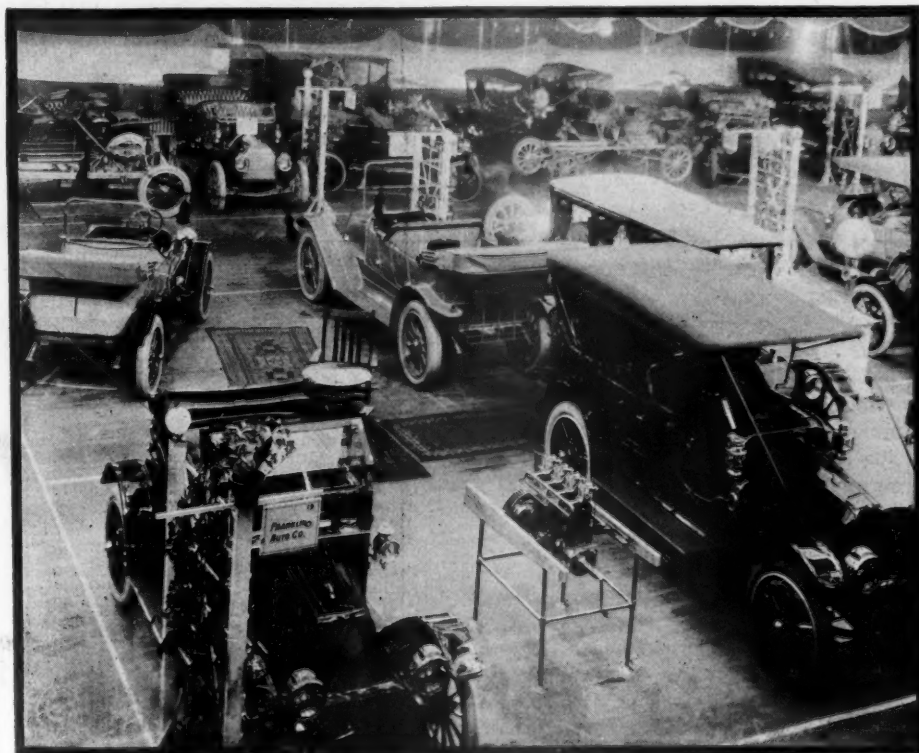
lasted until Saturday. It is estimated that not fewer than 20,000 persons visited the First Regiment armory, said to cover more floor space than any other building south of the Ohio river.

Although the exact figures cannot be had because of the tendency of some dealers and agents to keep their sales secret, fully 100 cars were sold, representing \$200,000. Each make of machine was shown in from one to seven different models. Every one of the forty exhibitors, who had on display a total of 250 cars, aggregating in value \$350,000, expressed himself as more than well pleased with the results of the show.

Looking Ahead a Year

So successful was the show from every point of view that Prince Wells, president of the Louisville Automobile Dealers' Association, already has requested a reservation of the armory for the 1912 exhibition. Several of the dealers already have spoken for space next year. The date for the fifth annual exhibition has not been definitely settled, but it was informally agreed that it should fall in the week which St. Patrick's day occurs. Last year there were thirty-eight exhibitors and a conservative estimate at the close of the 1910 show placed the number of cars sold at seventy-five.

The greatest demand, both in Louisville and out in the state, always has been for the cars selling in the neighborhood of \$1,000. In the city the market is good for high-priced cars, but the bulk of the business is done by the agents selling the medium-priced machines. One con-



FROM THE GALLERY IN THE SYRACUSE SHOW

cern, the Banks Motor Car Co., conducted a special exhibit at its salesroom during the show and reported the sale of thirty Ford cars.

Every agent, dealer, branch manager and factory representative was interviewed at the show to learn the exact conditions in the south and in Kentucky. About 150 agents, sub-agents and independent dealers, who live in Tennessee, southern Indiana and Kentucky attended the show, which is to this territory what the New York show is to the east.

The Local Situation

Analyzing the local situation it is found to mean that the farmers are beginning to realize the value of the motor vehicle and have started to purchase cars. Merchants in Louisville and the smaller cities out in the state have been slow to buy commercial cars, only about 150 being in active service today. Conditions, however, are changing and the sale of this type of motor vehicle is increasing steadily.

Following is a list of the various makes of cars exhibited at the Louisville show: Autocar, Brush, Cadillac, Case, Chalmers, Cole, Columbia, E-M-F, Firestone-Columbus, Flanders, Franklin, Haynes, Hudson, Hupmobile, Inter-State, Buick, Kissel, Krit, Locomobile, Marion, Marmon, Maxwell, Mitchell, Motorette, Oldsmobile, Overland, Packard, Peerless, Pierce-Arrow, Premier, Rambler, Reo, Sampson, Stearns, Stevens-Duryea, Stoddard-Dayton, Studebaker, Velie, Winton, Speedwell.

Electrics—Baker, Babcock, Columbus, Detroit, Fritchle, Hupp-Yeats, Rauch & Lang, Studebaker and Waverley.

Trucks—Alden Sampson, Autocar, Kelly, Gramm, Hart-Kraft, Morgan, Packard, Rapid and Victor.

The only Louisville-made vehicle at the show was the Longest truck made in the shops of Longest Brothers, of this city. Although Kentucky boasts of but one pleasure car factory—the Ames Motor Car Co., at Owensboro—it is undisputed that the motor has come to stay in the Blue Grass state, where the horse has so long reigned supreme. Those who have in close touch with the industry since its beginning believe this has, in a large measure, been responsible for the slow progress that heretofore has been made. The steel steed is forcing the horse from the field and no one would have it otherwise.

Popular in Louisville

The motor car has been the most potent influence for good streets and improved highways the south ever has known. It has brought to Louisville an industry whose field is far-reaching. It was just about 10 years ago that the first car—a rude buckboard affair—reached this city. Today about 1,360 cars, as fine a collection as could be found in any southern city, are owned by Louisville residents, while throughout the state the motor car is fast supplanting the family driving

Denver Exhibition One Worth While

Coloradoans Take Deep Interest in Annual Show, Which Attracts Farmers and Country Agents as Well as City Folk—Affair Much Larger Than One Held Last Spring in Same Place

DENVER, COLO., March 18—The annual Denver show which was staged for 5 days in the Coliseum in this city, came to an end this evening gafter a most successful run. As is usual with these exhibitions this fourth annual display of motor cars and accessories was one of the largest of the year on the minor circuit, there being seventy-five different exhibitors this year as against fifty-eight last year. Of these thirty-four displayed cars, whereas last year only nineteen agents had space in the building. The show included more than 100 different motor vehicles.

Every inch of the 22,000 square feet of space was taken, the main floor being devoted entirely to pleasure cars, while in the lobbies were located the commercial

horse, there being about 3,000 machines in Kentucky. Comparing the number of cars in Louisville this year with the number owned in March, 1910, an increase of 450 cars is shown.

No city in the United States, according to factory representatives, controls the sale so large a section of the country as does Louisville, nor does any city rank with it in the field of distribution. For in that particular field it stands without a peer at the present time. Some of the largest factories in the country have branches here and from this point not only do they send cars to cities and towns throughout the south, but shipments are made to Cuba and Mexico.

Most of the Louisville dealers are overstocked with second-hand cars and hardly a day passes but what some prospect wants to trade in a used car. During the months of January and February the market for new cars was slow, but with the coming of the first touch of spring 3 weeks ago came increased business on motor row and bright things are predicted for Kentucky during the coming year.

Credit Due Dealers' Association

The Louisville Automobile Dealers' Association deserves a lot of credit for producing the show. The expense of securing the armory and of preparing the elaborate decorations was tremendous. A scheme of natural decorations was followed out. Magnolia trees—not artificial, but real—were used in profusion, while imitation brick walls separated the exhibits. Smilax, evergreens, palms and other green things were used lavishly and the effect was that of a great park. The Imperial band furnished the music.

Preceding the opening of the show a dinner was given at the Seelbach by the dealers' association.

vehicles, with one section set aside for motor cycles. The display of accessories was made in the boxes surrounding the main hall, there being sixty of these.

That this section of the far west is interested in motor cars is shown by the attendance throughout the 5 days the shows lasted. Not only did the Denverites themselves support the affair liberally but the country dealers and their farmer constituents came from towns within a radius of a couple of hundred miles, the result being that business was good throughout the week. Not only were many retail orders booked but Denver agents found it possible to place agencies in several towns where heretofore they had not been represented.

The different makes of pleasure cars on view were as follows: Pierce-Arrow, Pope-Hartford, Columbus electric, Locomobile, Oldsmobile, Oakland, Ohio electric, Thomas, Reo, Chalmers, Rambler, Maxwell, Columbia, Marion, Hupmobile, Detroit electric, Lozier, Stoddard-Dayton, Alco, Stevens-Duryea, Waverley electric, Hudson, Velie, Cadillac, Marmon, Peerless, Buick, Packard, Dorris, Franklin, Everitt, Winton, Overland, Apperson, Baker electric, Case, Ford, Brush, Alden Sampson, White, Fritchle electric, Stanley, Regal, Bergdoll, Elmore, Colburn, Renault, Inter-State, Kisselkar, Mitchell, Firestone-Columbus, Empire, Hupp-Yeats electric, and Moon.

The display of commercial vehicles consisted of the following: Stoddard-Dayton, Grabowsky, Franklin, Brush, I. H. C., Rapid, Van Dyke, Chass, Gramm, Allen Sampson, Packard, Reo, Fritchle electric, Kisselkar, Seitz and Kelly.

AKRON'S RUBBER INDUSTRY

Akron, O., March 21—The Akron chamber of commerce has prepared a list of the eighteen rubber concerns of the city, showing its importance in the amount of capital invested, time of organization and the number of people employed. The table is as follows:

Firm	Capital	Em- ployes
B. F. Goodrich Co.....	\$20,000,000	5,000
Diamond Rubber Co.....	10,000,000	4,500
Goodyear Tire & Rubber Co.	4,000,000	1,700
Firestone Tire & Rubber Co.	4,000,000	900
American Hard Rubber Co.	2,500,000	300
Swinehart Tire & Rubber Co.	400,000	150
Buckeye Rubber Co.....	209,000	225
Miller Rubber Co.....	500,000	300
Alkali Rubber Co.....	1,000,000	350
Star Rubber Co.....	250,000	125
Royal Rubber Co.....	200,000	15
Stein Double Cushion Tire & Rubber Co.....	200,000	15
American Tire & Rubber Co.	200,000
Standard Rubber Co.....	50,000
Motz Tire & Rubber Co....	50,000	6
Lyon Rubber Co.....	15,000	15
Federal Waterproofing Co.	100,000
	\$43,674,000	13,601

Pittsburg Starts Its Show Session

Crowd of 7500 Turns Out for Opening of Affair in Exposition Building—On View Are 159 Pleasure Cars and Trucks—Most Interest Shown In the Moderate-Priced Runabout

PITTSBURG, PA., March 20—Unique in its arrangement and distinctly successful in the number and character of its exhibits is the show which opened Saturday night under the auspices of the Pittsburg Automobile Show Association, Incorporated. About 7,500 people passed through the turnstiles the opening night. They were surprised and delighted with the beautiful interior of the great Exposition building, for its magnificent color scheme of red, white and gold, its thousands of lights, hundreds of yards of natural vines, beautiful displays of potted plants and commodious palm garden rest rooms made a scene which surpassed in general attractiveness any motor show ever seen in this city.

High above the long line of cars hung the huge tired wheel, 12 feet in diameter, on each side of which was the painted reproduction of the poster girl. Great canvasses 18 by 26 feet, on which were fine oil paintings, stretched around the walls of the immense show room, offer a novel and inspiring background for the motor cars. The effect of the decorations and show arrangement was decidedly pleasing.

Cars at the Show

The exhibits of cars at the exposition show are large and varied, in all, a total of 159 models of pleasure cars and twenty-two models of trucks. These vehicles range in price all the way from \$450 to \$6,000. They are arranged in long aisles, the truck exhibit occupying the north side of the great building and the motor cars the center and the south side. The accessory exhibits, numbering forty-four, are ranged around the balcony and are easily reached by winding stairs leading up from the first floor.

Great interest is shown in the exhibit, both by the motoring public of Pittsburg, which is now using between 3,000 and 3,500 cars, and also the buyers of surrounding towns within a radius of 150 miles of Pittsburg, including eastern Ohio, West Virginia and western Pennsylvania, which are covered by Pittsburg agencies and which own at least 5,000 cars today.

Many Eager to Buy

More inquiries for cars are being made at this show than last year and the crowds of visitors this week give Pittsburg dealers reason to hope that this year will be very much better in their sales totals than any one of the preceding 3 years. The chief interest with spectators seems to center in the moderate-priced runabout and the heavy touring car. The former, owing to the great variety of models seen at the

Exposition show, is decidedly the better seller.

The exhibits are placed in such a way at this show that every car is seen to its best advantage, the aisles being marked by high sign posts mounted upon pedestals consisting of columns of frosted white imitation granite bearing cross arms of white and showing the names of the exhibitors in raised letters which carry out the rich color scheme of the entire show, red, white and gold.

All the Space Taken

Every inch of the 65,000 square feet of floor space in Exposition hall is taken and many applications have been turned down. The big motor boat exhibit at the east end of the hall was especially noteworthy and drew forth much interest from the boating clubs scattered along the Allegheny river, which came en masse in some cases to visit it.

The makes of cars on view are: Abbott, Alco, Auburn, Bergdoll, Brush, Clark, Correja, Crawford, Cuttin, Detroit electric, E-M-F, Everitt, Flanders, Great Western, Halliday, Haynes, Hupmobile, Klinekar, Knox, Lexington, Lion, Moon, Oakland, Ohio, Oldsmobile, Otto, Overland, Paige-Detroit, Penn, Rambler, Regal, Selden, Speedwell, Studebaker, Thomas, Velie, Westcott, Atterbury, Chase, Crown, Garford, Gramm, Kelly, Wilcox and Speedwell.

CONDITIONS IN ATLANTA

Atlanta, Ga., March 20—Conditions in Atlanta are most flourishing. As one striking illustration the Mitchell has just taken a 5-year lease on a vacant lot, at a two-story garage.

Atlanta manufacturers continue to multiply. The American Motor Car Co. soon will be ready to manufacture light commercial wagons and the DeLoach Mfg. Co., which is to move to Atlanta soon from Bridgeport, Ala., will make a high-wheeled-friction-drive truck. The Primo Motor Co., which is the most active local company, has recently opened a salesroom on Auburn avenue.

Here are some peculiarities dug out in a round of the local dealers. The United Motors Southern Co. reports three times as much business in prospect as a year ago in cheap cars. The Fulton Auto Co. reports more than twice as many live prospects as it had a year ago.

Steinhauer & Wight state that they take few cars in trade, but when they do have to they take them to the country to sell them. They find the demand for new cars in Atlanta, for old ones in the rural districts.

The Reo Distributing Co. is one of the few which reports less business than last year; but at that has more and better prospects for the immediate future. The Long-Henderson Motor Co. is virtually the only other one which reports present business not quite up to last year. However, this company is satisfied with the prospects. Herman Haas is one of the few dealers who is encouraged over the truck outlook. He believes that 150 will be sold in Atlanta very soon.

The southern branch of the White Co. expressed encouragement over the large demand for cars and the increased intelligence shown by the purchasers, commenting on the fact that horsepower had begun to be of less importance and low upkeep cost of more.

The Overland southern branch is one company that reports an increased demand for low-priced cars out of all proportion to the demand for higher priced ones. In the main, dealers are well satisfied with conditions and prospects.

CENTRAL ILLINOIS OUTLOOK

Bloomington, Ill., March 13—The season of 1911 is opening satisfactorily to the motor car agents of Bloomington and central Illinois generally, and the outlook is highly encouraging in all departments. Bloomington is commencing to pay more attention to motor trucks. Several of the local industries are investigating the subject.

The motor trade in this territory appears to incline to the medium-priced cars. The runabouts from \$750 to \$1,000 are attracting attention among physicians. The farmers, in most instances, think \$1,500 enough to pay for a four or five-passenger touring car, and few can be induced to go as high as \$2,000. Small cars are not popular in the rural districts. The Buick, Ford, Cadillac, National, E-M-F, Hupmobile and Warren-Detroit appear to lead in sales in this territory. The agents of the higher-priced cars and the electrics also report numerous inquiries, and the volume of sales is reported as up to expectations for this stage of the season.

A recent campaign to increase the membership of the McLean County Automobile Club and to work up interest in good roads, has met with great success. While boosting good roads, the motorists also have been keeping up an agitation for improved city roads and also were successful in securing the adoption of an ordinance by the city council of Bloomington which controls all vehicles and establishes the rights of motor cars and horse-propelled vehicles, fixing a fine for any person who turns to the left instead of the right and fails to display lights after dark. A speedway proposition is now up and is receiving much encouragement. It is likely that a stock company will be formed.

Westerners Display Great Enthusiasm

Idaho Motorists Extend Unique Greeting to A. G. Batchelder, Chairman of Executive Committee of National Organization—Street Parade held at Twin Falls—State Association is Formed

Snake river canyon. In the evening a banquet was given by the state association, followed by a public reception at the Commercial Club, which did much good for the motoring cause.

The next day the annual meeting of the Idaho State Automobile Association was held, and the following officers chosen for



MOTOR PARADE AT TWIN FALLS, IDAHO, IN HONOR OF THE A. A. A.

TWIN FALLS, Idaho, March 15—The city of Twin Falls ever will be a green spot in the memory of A. G. Batchelder, chairman of the executive committee of the American Automobile Association. Batchelder is making a grand swing around the circle of the principal cities of the United States in the interest of the A. A. A., and Twin Falls was among the list of scheduled stops in order that he might confer with the officials of the Idaho State Automobile Association, recently formed.

Twin Falls is only an infant as years go, the site of the city being a sagebrush desert 6 years ago. But events move rapidly in the west, more particularly in Twin Falls. From literature issued by the Commercial Club—and from personal inspection by Batchelder—the city has 18 miles of macadam streets, three public school buildings, magnificent hotels, a brass band, and all the comforts of effete eastern towns. And it also is enthusiastic over motoring.

Every citizen of Twin Falls either has a motor car or wants one, so it was deemed but fitting and proper that a reception be given to the executive officer of the A. A. A. when he arrived. To begin with, a delegation went down the line 60 miles and met him at Minidoka, acting as escort back to Twin Falls. The Twin Falls Automobile Club had charge of the arrangements, and the members made the welkin ring, or words to that effect. When the guest descended from the Pullman car he was greeted with the tooting of a score or more of motor horns, while flags waved and a cannon salute announced his coming. It was a joyous occasion for the easterner.

At the head of the reception committee



A. A. A. REPRESENTATIVE GIVEN RIDE IN OLD-FASHIONED STAGE COACH BY MOTORISTS OF TWIN FALLS, IDAHO

were two little girls, daughters of prominent citizens. One of these presented Mr. Batchelder with a big placard, "Welcome," and the second went forward and handed him a monster key. He was escorted through the crowd to the plaza in front of the depot and placed in the famous Garnett stage coach, which formerly ran over the Boise-Kelton trail, and which still retains the marks of bullets fired in encounters with the Indians. The coach was drawn by four milk-white horses, and the driver was Bill McGovern, a famous Indian fighter of the old days, still hale and hearty.

A procession was formed, headed by the Twin Falls band of forty pieces. Following this was Company D, Idaho National Guard, then the historic stage coach and a score or more of motor cars. A parade was made over the principal streets of the city, the band playing "See the Conquering Hero Comes" and other martial airs. After luncheon at the Commercial Club the guest was taken in a car to Shoshone falls, 5 miles distant, and also to the Twin falls, 3 miles farther up the

the ensuing year: President, J. E. Clinton, Jr., Boise; secretary, Robert W. Spangler, Twin Falls; treasurer, W. W. Mickelwait, Twin Falls. The Idaho people feel confident that there is a great future in store for the state association.

ELGIN ROAD RACE AFFAIRS

Chicago, March 21—The Elgin Automobile Road Race Association held its annual meeting last Wednesday night, elected officers for the ensuing year and paved the way for the renewal of the national stock chassis road-racing meet on August 25-26. Harry Hemmens, postmaster of the town of Elgin, was elected president, succeeding F. W. Jencks, who became one of the directors; otherwise there were no changes in last year's officials. The association already has started its work and at the present time it is scraping and dragging the course in anticipation of heavier work later on. The home stretch will be widened at the grandstand by cutting down the knoll at Britten's and using the gravel secured in this way for widening purposes. It also

has been decided to start the races at 11 o'clock each day instead of 10 in order to give the spectators a better chance to get to the course.

Permits to use the roads for racing purposes have been secured from the road supervisors of Kane county and from all indications everything will be harmony at Elgin this summer. Plans also are under way to oil the 23 miles of road from the city limits of Chicago to Elgin in order that spectators driving to the races may travel over a model highway.

A meeting of the farmers owning frontage on the course was held tonight at Urdina. The farmers declared they want the races, but so far the association has not secured the farmers' signatures, although there is no doubt they will come in under the new terms, which double the percentage to the farmers on parking spaces and gives each a \$25 guarantee. The minimum parking space charge this year will be \$2, whereas last year the price was the same everywhere—\$1. This year some of the choice locations will be sold for \$5 and \$10.

In order to scatter the people around the course it is proposed to erect six more score boards at advantageous positions on the circuit.

BURMAN TRAVELS FAST MILE

Jacksonville, Fla., March 19—In his first tryout of the Jenatz Mercedes today Bob Burman drove the German car a mile over the Atlantic-Pablo beach in 28:40, unofficial, of course, but fast enough to make it seem possible that Oldfield's record may be broken at the meet which opens here March 27. Entered for the meet as stock cars are the National, Lancier, Mercer, Pope-Hartford, and E-M-F, while the non-stock nominations include the Mercedes, Benz, Darracq, Cole, Case, and Warren-Detroit.

SOLIDIFIED GASOLINE PERFECTED

London, March 10—Considerable interest has been added to the possibilities of solidified gasoline for use on motor cars and in other departments of manufacture. The general method of manufacturing solidified gasoline was described in Motor Age, December 29. Since that time, however, the mode of using it for motor cars has been developed. With it the only carbureter required is a cubical metal box with a perforated tray carried midway of its height. The hot exhaust pipe passes through the box below the tray, and the heat rising from these pipes aids in liquifying the solid gasoline which is carried on it. The box has a cover and an air entrance at one end so that the suction of the motor carries the air over the solid gasoline through a pipe exiting from the opposite end of the box and leading to the cylinders. Should not enough air be obtained this way an auxiliary valve can be fitted.

From tests made with engines operating

Illinois Association Is Rejuvenated

New Officers Elected by State Body—A. A. A. Will Have a Powerful Ally If Plans Carry—A. J. Williford of Nokomis Chosen President and John H. Caldwell Secretary

SPRINGFIELD, Ill., March 16—Illinois proposes to become a prominent member of the American Automobile Association family, and with that idea in mind representatives of nine clubs met here today for the purpose of rejuvenating the dormant state association. That this has been accomplished is evidenced by the number of live wires who have been placed in control and who come from clubs outside of Chicago, which will do much toward removing some of the prejudice against the state body when Chicagoans were in complete control. Today all the favors were distributed down state, the presidency going to A. J. Williford, of Nokomis. H. S. Hargrave, of Hillsboro, Ill., was selected for first vice-president, while William McGinley, of Decatur, president of the club there, was made second vice-president. The third vice-president is a plum that will be distributed later. John H. Caldwell, of Springfield, was elected secretary, and Henry Paulman, of Chicago, was reelected treasurer.

These five men and the following will make up the directory that will control affairs for the ensuing year: W. D. Snow, Bloomington; T. M. Beatty, Quincy; W. P. Graham, Rochelle; C. G. Sinsabaugh, Chicago; R. J. Ton, Roseland; Dr. E. F. Hazell, Springfield; A. W. Brayton, Mount

Morris; H. T. Pearce, Bowen; and B. J. Uran, Mattoon. In addition, chairmen of the three standing committees were appointed as follows: Legislative, H. P. Bisch, Springfield; good roads, W. P. Graham, Rochelle; membership, R. J. Ton, Roseland.

The next meeting of the association will be held at Hillsboro on May 18, at which time it is hoped to have present A. G. Batchelder, chairman of the executive committee of the A. A. A., and George Diehl, chairman of the A. A. A. good roads committee. The Illinois motorists hope to arrange a circuit through the smaller towns of the state which can be followed by the easterners, who will talk upon good roads construction and the benefit of membership in the national body. The wind-up will be at Hillsboro, at which place there will be a grand gathering of motoring clans on May 18. Good roads enthusiasm will run high then.

It is the intention of the new officers to do a lot during the present year in the way of spreading good roads propaganda and making a fight on adverse legislation. The prospects look good for recruiting many new clubs throughout the state, and it is believed by the end of the summer there will be at least twenty clubs owing allegiance to the A. A. A. through the state body.

it has been found there is an economy of 20 per cent with solid gasoline as compared with liquid. A portion of this economy is due to the absence of unburnt gasoline in the exhaust, because the danger of an overrich mixture is not so great as where liquid fuel is employed.

But furnishing the motor with fuel is only one of the possibilities of it in conjunction with the motor car. Solid gasoline may be employed for lighting headlights, etc. Gas mantles have to be used in such cases. The value of solid gasoline in this case is that it can be carried in a small reservoir under the burner.

STEVENS-DURYEA CHANGES

Chicago, March 21—The announcement is made by the Stevens-Duryea Co. that Harry Fosdick has been appointed general sales manager of the factory at Chicopee Falls, Mass. Under his direction a complete organization of the sales department of this company will take place. Mr. Fosdick recently was sales manager of the Fiat Automobile Co.

The company has opened a branch in Chicago and is temporarily located at 2349

Michigan avenue in the Fiat branch. The Chicago retail sales department will be under the supervision of J. A. Bender, with Lewis F. Stafford as superintendent of the service department. Both have been identified with the Geyler company, which formerly handled the Stevens.

Mr. Fosdick has divided the country into sections, with himself as general sales manager in charge of eastern territory. District No. 2, comprising the central and southwestern states, will be under Arthur W. Barber as western sales manager, who will have as his traveling representative in the south and southwest Cassius F. Baker. The Stevens people believe Chicago is the one big distributing center of the country.

SAVANNAH ASKS FOR RACE

New York, March 20—Formal application for the grand prize road race for the A. C. A. cup has been made to the Motor Cups Holding Co. by Harvey Granger, president of the Savannah Automobile Club. Owing to the absence from the city of W. K. Vanderbilt no action has been taken on the application.

THREE-BEARING CRANKSHAFT

LOS ANGELES, CAL.—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, advise with the following information:

1—What is the advantage of a three-bearing crankshaft over a five-bearing, if any, and if no advantage, why are all manufacturers of high-grade cars using them?

2—I notice all high-grade car manufacturers that are using semi-elliptic springs, especially in the rear, are making them flatter, or, rather, with less curve, each year. What is the advantage in riding qualities?—M. E. A.

1—The reason for the use of three-bearing crankshafts in four-cylinder motors is not so much due to any inherent advantages in the type of crankshaft as to the fact that so many of the motors are made with the cylinders cast in pairs. With cylinders cast in this way it is difficult to provide bearing surfaces between the two cylinders that make up a pair, although in Europe very short ball bearings have been used. The three-bearing crankshaft simplifies crankshaft design and construction, and three bearings are easier to adjust than five and there is slightly less friction with less oiling complications in the three-bearing type. On the other hand, the five-bearing crankshaft is more rigid and wears better. A three-bearing crankshaft allows of a shorter motor, as four cylinders cast in pairs occupy less room than cast separately.

2—There are three advantages in having semi-elliptic springs flattened rather than curved. The flatter springs allow the body to hang lower, thus lowering the center of gravity; there is less side sway than with greatly curved springs, and less rebound. It is not a fact that nearly all high-grade cars are using the semi-elliptic rear spring. If you will carefully analyze the field you will find that many are using the three-quarter elliptic, which really has the undisputed field at the present time. There has been, particularly in Europe, a great aim to eliminate side sway with such springs, and in a few cases special friction

The Readers'

devices, extending from the side members of the frame to the differential housing, where there is a shock absorber device to absorb the sway, have been fitted on British cars.

REMAGNETIZING MAGNETS

Wellington, Kans.—Editor Motor Age—Is there not a method whereby one could remagnetize the magnets on a magneto with the local current without the trouble of returning the magneto to the factory? I know the makers advise their being returned for any correction, but my Remy became weak some time ago. It also had a bent main shaft. My mechanic took it all apart, made a new shaft and replaced it. The magneto worked as well as before being torn down, but not understanding electricity the mechanic didn't know how to remagnetize it. I sent it in and had it recharged and it is as good as new. Cannot that be done here similarly to recharging storage batteries and will Motor Age describe the process?

The surest and quickest way of eliminating your trouble is to write the manufacturer of your magneto, state your case, and endeavor to secure another magneto for temporary use. Have this magneto shipped you and when you get it have it installed on the motor; then return your magneto to the manufacturer and let him overhaul it.

As regards the charging of the magnets yourself, there are several methods by which the magnets can be successfully remagnetized, but, as both experience and special facilities are required to do this, it hardly would be practicable to attempt the operation without these.

The most common method of remagnetizing the magnets of a magneto is by means of a strong electro-magnet, such as is illustrated at X in Fig. 1. Almost all magneto agents have a magnet of this sort

EDITOR'S NOTE—To the Readers of the Clearing House Columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated.

for the purpose above mentioned. It consists of two soft iron cores, indicated by the dotted outline C, which are about 1 inch or more in diameter and have several hundred turns of No. 18 double cotton-covered copper wire wound around them in the opposite directions indicated by the arrows. These cores have steel or iron plates mounted on their upper ends and the bottom ends are secured to a base plate B of the same soft iron material. It will be noticed that the wires are wound in opposite directions, so that the current will flow in opposite directions and establish the respective polarity of the two poles.

With an apparatus of this sort a magnet can be readily remagnetized in perhaps less than a minute, when properly manipulated. Where considerable remagnetizing of magnets is done an apparatus of this kind is quite practical, but where a job of this kind rarely comes to hand it is claimed that satisfactory results may be obtained by winding 100 turns or more of the above mentioned wire around the poles of the magnet in the same manner in which they are wound around the cores of the device above described, and an electric current then passed through the wires. There are little kinks, however, in the manipulation of a magnet, that are very essential to the success of the operation of remagnetization.

The operations of remagnetizing a magnet by the use of an electro-magnet are shown in detail in Fig. 1. In the first place the north pole NP of a magnet, X

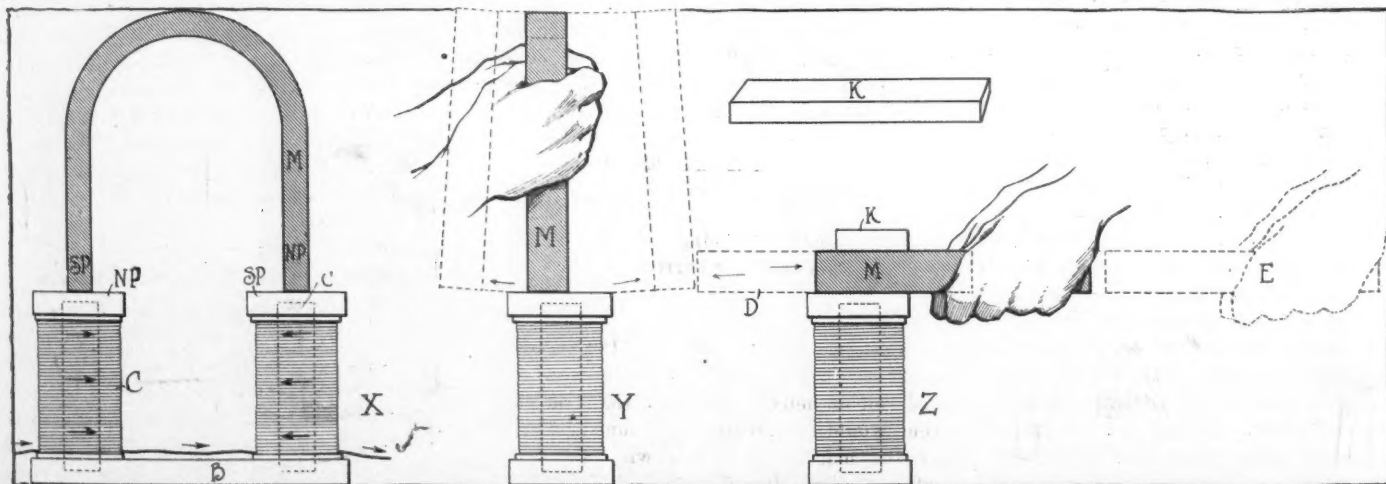


FIG. 1—COILS AND OPERATIONS IN REMAGNETIZING THE MAGNETS OF MAGNETOS

Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

Fig. 1 always should be set in contact with the south pole of the electro-magnet, while the south pole of the magnet to be magnetized should be placed in contact with the north pole of the magnetizing magnet. Opposite poles attract each other, while similar poles repel, and the polarity of a magnet always can be found by holding the magnet near or over the poles of the electro-magnet. If, for instance, the south pole SP of the magnet M be held between the north and south poles of the electro-magnet, it will immediately be drawn to the north pole NP, and if the north pole of the magnet M were to be held between the two poles of the electro-magnet it would be drawn towards the south pole SP; thus the polarity of a magnet may be ascertained.

If a magnet to be remagnetized were to be placed on an electro-magnet with like poles in contact, the polarity of the magnet would be changed and its magnetism greatly weakened. The polarity of a magneto-magnet should not be changed and care always should be taken in removing magnets from a magneto to see that the poles are marked properly in order that they may be correctly replaced.

Now, as for the operation or manipulation of a magneto magnet to remagnetize it, assuming that the current is passing through the wires of the electro-magnet and the polarity of both the magneto-magnet and the electro-magnet is known, set the magneto magnet M on to the electro-magnet, as shown at X, with the opposite poles in contact, then take hold of it, as indicated at Y, and brush it

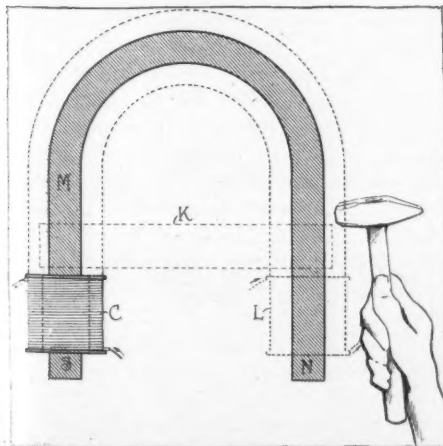


FIG. 2—USING A SINGLE COIL

back and forth over the pole pieces of the electro-magnet, as indicated by the dotted lines. After being brushed back and forth from five to twenty times, lay the magnet on its side with the bend close to the electro-magnet and the ends protruding out in front of the pole pieces, as indicated by the dotted outline D. Then draw the magnet backward until the ends are half way across the pole pieces of the electro-magnet, rock the magnet up onto the pole pieces into the position shown at Y, and swing it right over until the bend portion is on the side indicated by the dotted lines D. This will bring the opposite edges of the magnet M in contact with the pole pieces of the electro-magnet. The magnet then should be rubbed back and forth once or twice with the magnet in this position so that this portion can be thoroughly saturated, and then rocked back into the position Y and over into the position indicated at Z again.

By this time the magnet should be thoroughly remagnetized, so all that remains to be done is to leave it rest in this position for a few minutes, put a keeper K across the opposite edges, as indicated at Z, then pull the magnet or, rather, slide it off and away from the poles of the electro-magnet, as indicated by the dotted outline E. The keeper K is not shown in this dotted outline, but it should be in place until the magnet is in contact with the pole piece, which constitutes the base of the magneto from which it was taken.

Another method of remagnetizing a magneto is by making what is known as a helix, consisting of several hundred turns of wire of the same character used in the electro-magnet, and then passing it from end to end around the bend of the magnet to be magnetized, as indicated in Fig. 2. If a current of electricity of not less than 6 amperes be passed through a helix of about 200 turns, and this helix drawn over the magnet to be remagnetized several times, back and forth, from end to end, the horseshoe will become powerfully remagnetized. The manipulation of this means of remagnetizing a magnet is quite clearly shown in Fig. 2. The operator will bear in mind that that end of the magnet will become north which is under the wire or wires carrying the positive current, the north pole being found to the left hand of this entering current.

The arrows at the end of the wires leading to and from the coil or helix indicate the flow of current. If, as indicated in this illustration, the winding of the coil or helix C was such that the current would be circulating around the pole of the magnet in a clockwise direction, when looking directly at the end of the magnet, that pole would become positive.

Now, when the coil is passed around the bend of the magnet to the opposite pole the windings would be in an opposite direction, and the negative polarity obtained on this pole.

As one passes the coil C back and forth from end to end, with the current passing through it, it is advisable to tap the steel magnet repeatedly; and if the circuit between the battery or source of current and the helix of wire be frequently broken the result would be even more satisfactory. Of course it must be understood that a 110-volt electric light current can be more satisfactorily employed than the 6-volt current of the battery.

A storage battery can be used if electric power of higher voltage is not at hand. The arrangement for this is shown in Fig. 3. Wind a coil of wire around one leg of the permanent magnet and connect one side to one terminal of the storage battery. A permanent connection should not be made between the poles of the battery. When the coil of insulated wire has been wound around the magnet and the soft iron keeper is in place, the battery is short-circuited several times by holding the loose end of the wire A in the hand and wiping it across the terminal of the battery. The resistance to an effort to remove the keeper will indicate the extent to which the magnet has become magnetized.

HOUSECLEANING THE RADIATOR

Putnam, Okla.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give me a formula for a solution to clean and remove sediment from a radiator.—F. C. Staley.

To dissolve lime sediment and remove it from a radiator make a mixture by dissolving 2 pounds of crystals of soda to each gallon of water contained in the cooling system. Pour this in the radiator; run the motor for a few seconds so as to get it through the entire system; leave the motor over night in this way; and the following morning flush out thoroughly with water. In flushing see that there is an unobstructed flow of the water through the radiator and it is often desirable to reverse the flow in the flushing process.

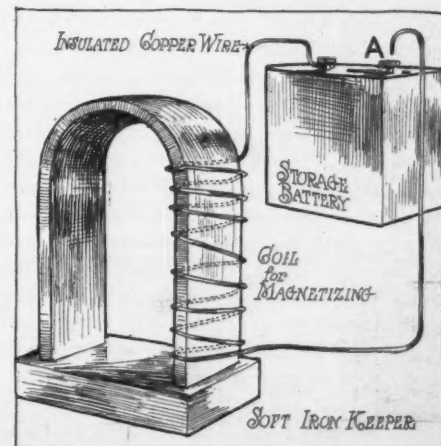


FIG. 3—MAGNETIZING WITH A BATTERY

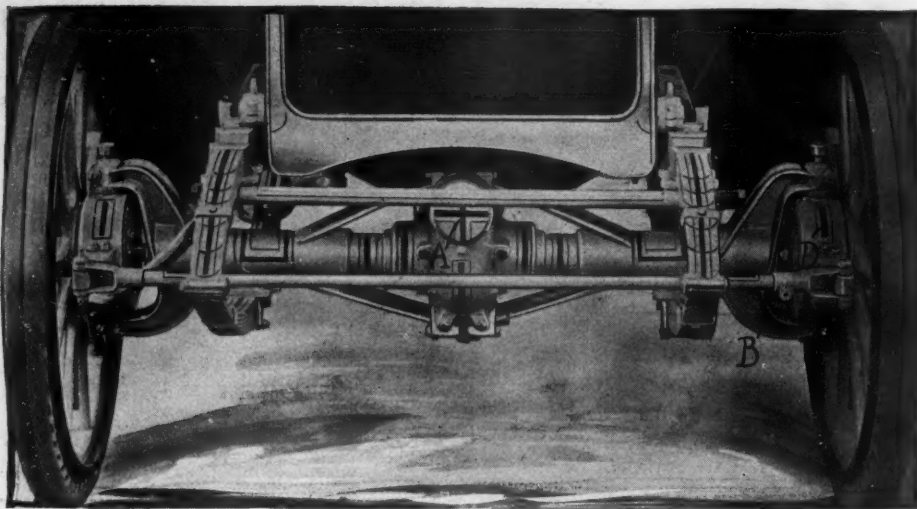


FIG. 4—ROVAN FRONT DRIVING AXLE

If you do not care to use this process practically any of the boiler compounds on the market, which may be obtained from the supply houses, are suitable for cleaning the radiator. There are on the market a great many special compounds for cleaning radiators, which have proven to be entirely satisfactory and which do not leave any sediment in the cooling system.

T OR L CYLINDER TYPES

Amboy, Ill.—Editor Motor Age—Kindly explain in the Readers' Clearing House the advantages of the T-head cylinders and the L-type in a 30-horsepower engine. Which has the more advantage, the explode-in-the-head or on-the-side engine?—W. Fitzpatrick.

The L-head type of cylinder is more efficient and easier to make, but the T-type cylinder renders a motor more accessible and gives a more symmetrical appearance. With the L-type of cylinder head only one camshaft is used, and so weight in the crankcase is reduced and cost also reduced. Where T-head motors are used the valves can be made larger, as there is ample room at one side for the intake and at the opposite side for the exhaust. With an L-type motor a higher percentage of the mixture is directly above the piston, where it will exercise the greatest force. This is what gives a valve-in-the-head motor its high efficiency, for in this type of motor the mixture enters directly above the piston.

It is presumed that by the terms "explode on the side" and "explode in the head" you refer to the location of the spark plugs. So far as these are concerned it is a question of design of the engine rather than of efficiency. With correct design for each location the efficiency should be about the same, but in many cases the shape of the combustion chamber is such that a spark plug could not be located on the side with good results. Where spark plugs are located in the path of the incoming mixture this current of gas will clean off any carbon that might accumulate and there will always be a certainty of fresh gas around the plug, which is de-

sirable. When the gas around the plug is mixed with exhaust gases the force developed is less.

REVERSE GRINDING VALVES

Moore, Mont.—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, kindly inform me whether it is better to grind valves in one direction all of the time or to change the direction from time to time?—R. W. Lumry.

Turn the valve ten or twelve times one way and then reverse the direction. The method of grinding varies as to the number of turns in one direction and then the same number in the opposite direction. Some factories give four turns and reversals, others six and others fifteen.

TWO-CYCLE ENGINE TROUBLES

Greentown, Ind.—Editor Motor Age—Through the Readers' Clearing House, will Motor Age tell me what is the trouble with my Elmore engine. It seems to start

all right, but does not run very long. It is a two-cylinder two-cycle engine. I had new coils put on, the cylinders re-bored, a new carbureter, had all the leaks stopped, and apparently it is in good condition, but still it will not run longer than 10 minutes, when it seems to back-fire and stop. I have tried everything to make it run for a longer period, but without avail.—F. B. Neyhart.

If, in re-boring your cylinders, you did not make a good job, and did not fit new pistons and rings, you will find most of your trouble there. Your carbureter may not be properly adjusted—not enough fuel, too much air, or if you have changed the make or size of the carbureter from the one furnished by the Elmore company you may have one that is unsuited to a two-cycle engine. An air trap in your gasoline line may cause an intermittent flow of gasoline to your carbureter, or a small particle of dirt may be sucked up into the nozzle of the carbureter and fall back when the engine stops. Water in the carbureter may also produce the same results.

HEAT IN TORPEDO BODY

Lancaster, Wis.—Editor Motor Age—I want Motor Age's opinion as to whether a torpedo body causes excessive heat to the driver's feet?

2—Is it possible to get an offset crankshaft on dead center with the piston?—Subscriber.

1—A torpedo body naturally is warmer than an open-side body, but there is no reason for excessive heat. If too warm for your convenience, ventilators are easily applied.

2—Yes. In Fig. 6 in Readers' Clearing House for March 16, with the piston at A, the connecting rod and crank are in a line and the piston is on dead center.

PIERCE 48 REAR AXLE

Rochester, N. Y.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following questions:

1—Explain the rear axle construction on the model 48, 1910 Pierce-Arrow.

2—What kind of oil retainer is used and where is it located?

3—What is the best way of getting Timken roller bearings off?—Constant Reader.

1—The rear axle construction on the model 48 is shown in Fig. 1. From this it will be noted that the driveshafts S are keyed by Woodruff keys to the spur pinions S1 of the differential. To the other end of each driveshaft is anchored the wheel hub H by a set of three Woodruff keys shown in dotted lines. The outer end of the driveshaft is carried on a Timken bearing T.

2—The only oil retainer used is indicated at F, immediately outside of the Timken bearings. It is a felt one.

3—The Timken bearings are a close fit and naturally will be a little hard to remove. In the majority of repair shops what

NOTICE

Motor Age has received communications addressed to the Readers' Clearing House from the following named towns and nom de plumes:

Seattle, Wash.—H. L.
Cincinnati, O.—A Reader.
Duluth, Minn.—A. F. C.
Council Bluffs, Ia.—J. L.
Lawton, Okla.—A. B. C.
Charleston, Ill.—Subscriber.
Martelle, Ia.—A Subscriber.
New York—A Subscriber.
Hartford City, Ind.—Coll.
Denver, Colo.—A Subscriber.
Roseland, Nebr.—A Subscriber.
Vincennes, Ind.—Chalmers 30 Driver.
Vancouver, B. C.—An Interested Reader.
New Richmond, Wis.—T. C. M.
Chanute, Kan.—A. A. H.
Hazelton, N. D.—A Reader of Motor Age.
Ladd, Ill.—A Reader.
Sheldon, Ill.—Henry.
O. A. P.
Kana, Pa.—Reader.
Boulder, Colo.—Faithful Reader.
Woodstock, Ill.—Oskloosa.
Urbana, O.—A Subscriber.
Manistee, Wis.—An Interested Reader.

These communications will be held until the proper signatures have been received. All communications written over a nom de plume must bear the writer's signature, otherwise such communications will not be answered. These signatures are wanted as proof of the authenticity of the inquiries.—Editor Motor Age.

resembles a wheel puller is used. It is a V-shaped device with each end terminating in a hook which will engage with the bearing. At the angle of the V is a threaded hole in which is a bolt. This bolt rests against the rim of the axle driveshaft and by turning it the bearing is drawn off. Some assistance can be given by tapping the bearing gently with a hammer.

ROVAN FRONT-WHEEL DRIVE

Bradenville, Pa.—Editor Motor Age—In Motor Age issue of February 9 is a picture of the Rován front-wheel drive. Will Motor Age give an illustration of its internal gear and how it is constructed. Being interested in a four-wheel drive—which I think is an essential of an all-the-year-round motor car for the country roads—I study all front-drive devices to see which has the shortest distance from the center of the knuckle joint to the center of the hub. If one could get a suitable and efficient device that places the knuckle joint in the center of the wheel, it seems to me a four-wheel drive would be a matter of simple construction. In steering, then, neither front wheel would give a backward turn to its power shaft and could be driven by a ratchet arrangement, the rear wheels being driven by the usual differential arrangement, thus requiring only one differential.

In the issue of February 16 there was an illustration of the Miesse sleeve and piston valve motor. The illustration seems to say very emphatically that a sliding valve will not stay compression tight. Is that the case with the best type of piston valve? I experimented a great deal with one last summer and found it rather quick on the leak, but thought it was on account of faulty construction. Any account of the results of tests along that line will be very acceptable.—J. Munden.

Figs. 4 and 5 show the constructive details of the Rován front-wheel-drive delivery car. In Fig. 4 the general appearance is shown, practically the only difference being the drum-like expansion D on the wheel hub, which is used to contain the universal joint required in the axle driveshaft. In Fig. 5 are shown the com-

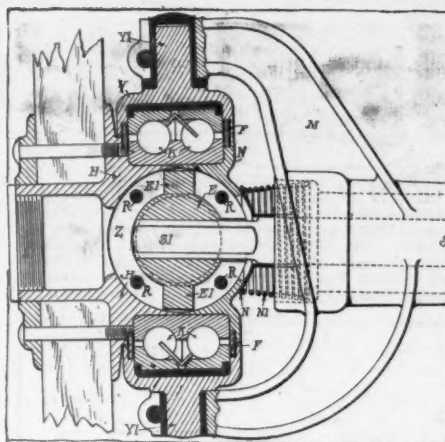


FIG. 5—CONSTRUCTION OF ROVAN UNIVERSAL JOINT

plete arrangements of the drive, including the shaft S with its end S1, which enters the universal block E. This block has bearing pins E1 by which the rotation of the shaft S is transmitted to the hub part H of the wheel. The bearings K are not located within the hub of the wheel proper but directly in line with the radii Y of the ends of the steering yoke, the yoke end being made specially large to accommodate this bearing. Packing F is used to retain the oil in the bearing and prevent dirt entering. A covering N encloses the entire opening in the wheel hub, this covering being retained in place by a spring N1.

The universal joint employed is the invention of Ralph H. Rosenberg and was

designed in 1905. The joint is claimed to give a high efficiency and before it was embodied in this front-wheel-drive scheme was claimed to be tested to an angle of 30 degrees, at which it showed a loss of but 3.65 per cent and when operating at an angle of 15 degrees or less that the loss was scarcely perceptible. Fig. 5 illustrates the joint. The steering yoke end is carried on the tubular front axle S and within the axle is the driving shaft S, squared at the inner end to enter the differential and at the outer end squared in the form S1 to engage the ball-shaped universal member E, which has a square hole to receive it. This ball-shaped universal member has two driving pins E1 placed diametrically opposite and in a plane at right angles to the driving shaft S. These pins engage in the outer ring universal joint member Z. This outer ring universal joint member has diametrically opposite holes in which oscillate the pins E1. The outer ring is made in halves, which are held together by the rivets R. The hub H of the wheel and the retainer ring N form a housing for the enclosed parts E and Z, having a transversely located spherically disposed slot in which the journal ring Z oscillates. A bearing K is placed around the universal joint housing, being clamped between the hub H and the retainer N. Felt washer parts F are used to exclude the dust.

The action of this universal is as follows: The shaft S with its squared end S1 revolves, being driven from the motor. The hub H, which floats on the bearing K, receives its rotation through the universal joint. In one position the universal parts are parallel with the driving shaft, but turning the wheels will cause the universal joint member Z to oscillate in the hub H, while the pivots or pins E1 will in turn oscillate in the ring Z.

The experience has been that there has always been considerable leak in conjunction with the piston valve. This could be largely overcome by increasing the length of reciprocation of the valve and improving the ring construction on the pistons. This, however, adds to the expense, which is always a factor that has to be reckoned with in manufacturing.

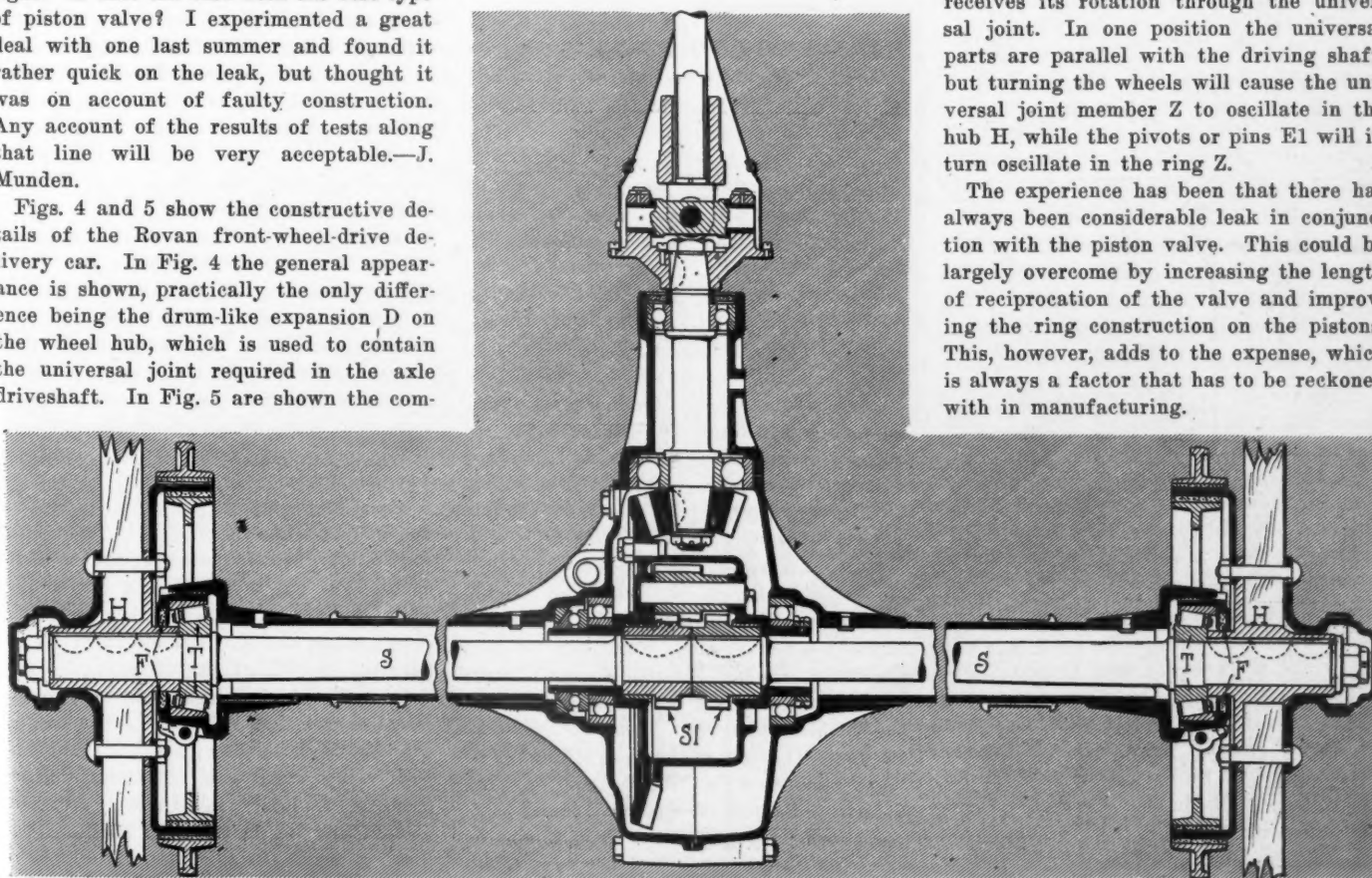
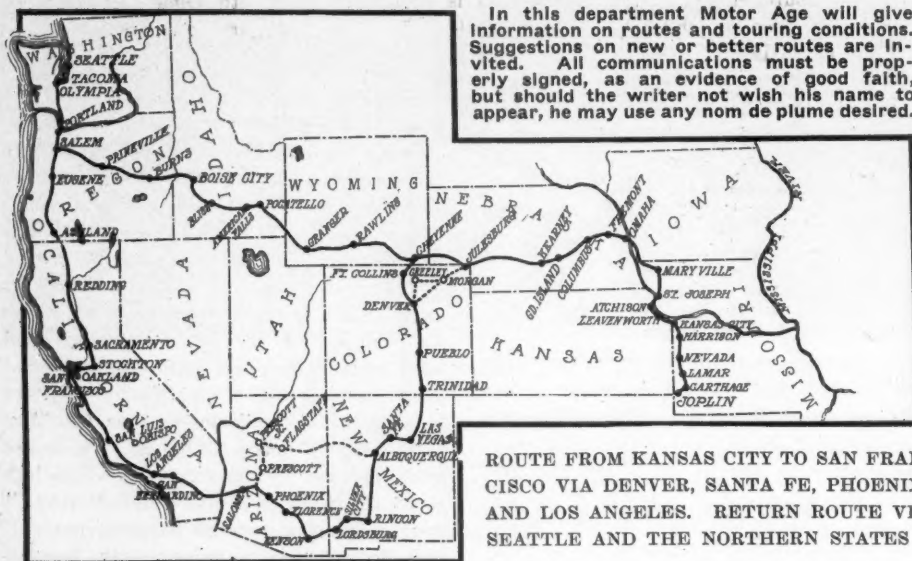


FIG. 6—THE PIERCE-ARROW MODEL 48 REAR AXLE



Routes and Touring



In this department Motor Age will give information on routes and touring conditions. Suggestions on new or better routes are invited. All communications must be properly signed, as an evidence of good faith, but should the writer not wish his name to appear, he may use any nom de plume desired.

ROUTE FROM KANSAS CITY TO SAN FRANCISCO VIA DENVER, SANTA FE, PHOENIX, AND LOS ANGELES. RETURN ROUTE VIA SEATTLE AND THE NORTHERN STATES

SUGGESTIONS FROM A TOURIST

ROCHESTER, N. Y.—Editor Motor Age—The following touring suggestions will increase the mileage to quite an extent during the day. When the car is put in the garage for the night:

- 1—Fill the gasoline tank.
- 2—Put in oil.
- 3—Screw up the grease cups.
- 4—Fill the radiator with water.
- 5—Look the car over for loose nuts, etc.
- 6—Patch the inner tubes, if necessary.
- 7—See that there is plenty of oil in the side and tail lamps.
- 8—Do not put off until morning, but attend to these few things at night no matter how tired or hungry you are.—James H. Pile.

SAN ANTONIO TO DENVER

McAllen, Texas.—Editor Motor Age—I would like the following questions answered in the Routes and Touring Information Department of Motor Age:

- 1—What is the shortest and best route from San Antonio, Tex., to Denver, Colo., during the month of May?
- 2—How far is it and how long should it take to make the trip under fair conditions?
- 3—Are there any road maps printed covering that section?—R. D. May.

1—Leaving San Antonio go to Trinidad by way of Boerne, Kerville, Ingram, Junction City, Menardville, San Angelo, Carlsbad, Water Valley, Sterling City, Big Spring, Soash, Lamesa, Tahoka, Lubbock, Plainview, Kress, Tulia, Happy, Canyon City, Amarillo, Dalhart, Texline, Clayton, Des Moines, Dedman, Lakeside Farm, Capular, and Raton. From Trinidad pass through Ludlow, Walsenburg, Huerfano, Verde, San Carlos, Pueblo, Eden, Pinon, Rugby, wigwam, Little Buttes, Fountain,

Kelker, Colorado Springs. From Colorado Springs to Denver pass through Pikeview, Breed, Monument, Palmer Lake, Perry Park, Sedalia, Gann, Acequia, Littleton, and Petersburg.

2—The distance from San Antonio to Denver is approximately 625 miles.

3—The Denver Motor Club publishes an official guide and hand book which contains information and maps on Colorado territory and which retails for \$1.50.

KANSAS CITY TO COAST

Joplin, Mo.—Editor Motor Age—Will Motor Age through Routes and Touring Information department furnish me with the best route from Kansas City to San Francisco via Denver, Santa Fe, Phoenix and Los Angeles? Also a route for return via Seattle and the northern states?—J. T. Hughes.

From Joplin, Mo., the route lies through Webb City, Carthage, Flint, Cary Town, Boston, Jasper, Lamar, Irwin, Sheldon, Milo, Nassau, Nevada, Wales, Rich Hill, Butler, Adrian, Lone Tree, Harrisonville, Belton, Grand View to Kansas City. In the spring the roads are heavy, but good in the late summer.

From Kansas City go north to Omaha, passing through White Church, Piper, Wallula, Lansing, Lowmont, Atchison, Rushville, Halls, So. St. Joseph, Savannah, Maryville, Wilcox, Burlington Junction, Tarkio, Shenandoah, Randolph, Tabor, Glenwood, Council Bluffs, Omaha. From Omaha west as far as Julesburg follow the 1910 Glidden tour route, which is as follows: Omaha, Elkhorn, Waterloo, Valley, Fremont, Ames, North Bend, Rogers, Schuyler, Benton, Columbus, Duncan, Silver Creek, Hayes, Central City, Chapman, Grand Island, Wood River, Shelton, Buda, Kearney, Odessa, Elm Creek, Lexington, Cozad, Gothenburg, North Platte, Hershey,

Sutherland, Paxton, Ogallala, Julesburg.

From Julesburg to Denver you have the choice of two routes: Continue west to Cheyenne, Wyo., thence south to Wellington and Fort Collins, Loveland, Berthoud, Longmont, to Denver. The second choice is via Fort Morgan, from Julesburg, passing through Ovid, Sedgwick, Red Lion, Crook, Proctor, Duff, Ford, Sterling, Atwood, Merino, Hillrose, Brush, Fort Morgan, Moreville, Bennett, Watkins, Sable, Denver. From Fort Morgan there is still another route, which has been laid out by the Denver Motor Club through Weldon, Orchard, Hardin, Kuner, Kersey, Greeley, Evans, Platteville, Ft. Lupton, Brighton, Henderson, Hazeltine, Model, Denver.

From Denver south to Santa Fe the route lies through Petersburg, Littleton, Acegua, Sedalia, Castle Rock, Perry Park, Palmer Lake, Monument, Pring, Breed, Pike View, Colorado Springs, Leander, Kelker, Skinner's, Crews, Fountain, Buttes, Buttes No. 2, Henkel, Pinon, Bragdon, Eden, Pueblo. Distance approximately 114 miles over sand and clay mixtures to Colorado Springs, and very good roads, with some adobe and sand, the balance of the route to Pueblo. From Pueblo to Santa Fe, distance approximately 315 miles, pass through San Carlos, Verde, Salt Creek, Larimer, Huerfano, Apache, Cuchara Junction, Walsenburg, Winchell, Main, Monson, Bunker Hill, Rugby, Lynn, Acme, Ludlow, Suffield, Bowen, Trinidad, Starkville, Raton, Maxwell City, French, Springer, Calmore, Wagon Mound, Tipton, Watrous, Los Vegas, Tecolote, Blanchard, San Jose, Pagareto, Glorieta, Santa Fe. Motor Age suggests that while in Denver you call at the headquarters of the Denver Motor Club and secure specific road directions over this route, as the portion of the trip from Pueblo to Santa Fe is a most difficult one and will be fraught with many difficulties at the best. Undoubtedly, the wisest course to pursue is to secure the services of a guide over the Raton mountains from Trinidad and also beyond Raton.

From Santa Fe, N. M., to Phoenix, Ariz., the motorist has the choice of two routes: One going through Albuquerque, then following the Santa Fe railroad to Prescott, then Phoenix. The other takes the tourist south along the Rio Grande river to San Marcial, N. M., thence to Rincon, Silver City, Lordsburg, Wilcox, Benson, Florence, and Phoenix.

Phoenix to Los Angeles is through Salome, Blythe Ranch, Chucawala, Palm Springs, Metea, White Water, Banning, Beaumont, San Bernardino, Los Angeles. This portion of the route—Santa Fe to Los Angeles—is one which has been laid out by the Automobile Club of Southern

Gasoline and the Impurities Encountered

By Frank Harris Floyd

MANUFACTURERS of motor cars and the domestic trade are asking a pertinent question: "What is commercial gasoline?" We have no standard to refer to. If we leave the matter to the refiner to formulate we never will have one. We need a standard for reasons that will become apparent later. It is the consuming trade that must take the initiative in formulating a standard. It must be intelligently formulated, carefully considering the refiner's position as well as our own. A great industry has been created. Internal combustion engines and the transmission of power generated have been applied to moving vehicles so scientifically, economically and with such control that the horse is almost a thing of the past as a power agent. Horsepower is literally supplanted by heat values stored up in gasoline.

What Is Gasoline?

What, now, is gasoline? Simply a trade name that came into use about 35 years ago, as a title for the light fractions distilled over from crude petroleum. Expressed by the Beaume scale, representing weight, it is anything from 87 gravity down to 60. It is lower yet in some sections, as you will find if you attempt to buy in some country stores fuel for your motor car. Commercial gasoline boils and distills over at a wide range of temperature. Its heat value and volatility vary, depending upon specific gravities, methods of refining and origin. It is a fuel little understood by the consuming trade, and the refiner is perfectly willing that it should be; for the demand has been heavy and the specifications are exacting, not always profitable to work under.

It will assist the designer of internal combustion engines used in motor cars particularly, and carbureter men as well, in their experimental work, if they will familiarize themselves with the source of supply, composition of the crude and methods of refining gasoline. Let us take them up.

Source of Supply

Sixty-one years ago, a man by the name of Drake drilled at Titusville, Pa., the first well, in search of crude petroleum, from which gasoline is recovered. At a depth of 400 feet he struck oil. It came to the surface only and was pumped out. Two thousand barrels was the total production for the year 1859 from Pennsylvania and the United States. Let us follow the source of supply from the year 1859 to 1908 carefully, for we are vitally interested in the amount of gasoline that is produced in this country. Pennsylvania's production in barrels within the years given stands as follows: In 1859, 2,000; 1860, 500,000; 1870, 5,260,000; 1880, 26,027,631; 1891, 33,009,236; 1900, 14,559,127; 1908, 10,584,453. Please note the rise and fall in production of the state of Pennsylvania.

EDITOR'S NOTE—The following paper was read at the meeting of the Society of Automobile Engineers, January 11-12, 1911.

Stimulated by the increased demand for the refined products, new fields were discovered in 1876 in Ohio, West Virginia and California. Following in their order came New York, Kentucky, Colorado, Indiana, Illinois, Kansas, Texas, Oklahoma and Louisiana. Dealing with the United States the production from the year 1859 to 1908 stands as follows: In 1859, 2,000 barrels; 1869, 4,215,000; 1879, 19,914,146; 1889, 35,163,513; 1904, 117,080,960; 1908, 179,572,479.

For good reasons we must consider the contributions from the different states toward the grand total for the year 1908. Pennsylvania produced 10,584,453 barrels; Ohio, 10,858,797; West Virginia, 9,523,176; California, 44,854,737; Indiana, 3,283,629; Illinois, 33,685,106; Kansas, 1,801,781; Texas, 11,206,464; Oklahoma, 45,798,765; Louisiana, 6,835,130; New York, 1,160,128. Other states, contributing fewer than 1,000,000 barrels, not mentioned.

The old fields, such as Pennsylvania, West Virginia and Texas, have declined in production, but new fields have been discovered and the yearly production total of the United States has increased from year to year. At the present time it does not appear that the yield of crude will lessen perceptibly for the next few years over the production of 1908, but will ultimately, the writer believes, and in the near future.

It will be important to note that Pennsylvania produced less than 6 per cent of the entire crude of the country for 1908; that Illinois, Oklahoma and California produced nearly 70 per cent; that we can no longer depend upon Pennsylvania for our supply as we did practically up to the year 1890, but must of necessity depend upon the gasoline produced from the crude of all the states.

Crude petroleum, mineral oil or hydrocarbon oil, synonymous terms, recovered from the different states, even from the different wells in the same states, is neither chemically nor physically alike. Neither are the distillates recovered, being affected by the character of the crude. The specific gravities of the various crudes as they are pumped from the different states will range all the way from 10 to 56 Beaume. The color of the crudes will vary from light amber to a jet black. It is the rule that the lightweight, light-colored crude is the great producer of gasoline and burning oils. The crude from Pennsylvania, for example, will average 40 Beaume, color light greenish, yielding about 20 per cent of 60-gravity gasoline, and 14 per cent of 65-gravity gasoline. The crude from Texas is entirely different, standing about 20 gravity, black in

color and yielding less than 3 per cent of heavyweight gasoline; so little, in fact, as to be hardly worth recovering.

Crude Composition

Oklahoma crude will average about 34 Beaume, color somewhat greenish, yielding about 14 per cent of 60-gravity gasoline and about 10 per cent of 65-gravity gasoline. Illinois crude is somewhat dark in color, will average about 30 gravity, and yields about 12 per cent of 60-gravity gasoline.

The California crude is of variable quality. Much of it will fall below 17 Beaume, producing no gasoline whatever; it is rich in asphaltum. Considerable crude has recently been discovered that stands as high as 33 gravity, from which as high as 12 per cent commercial gasoline can be recovered.

In dealing with the crudes of the United States we have a great variety of hydrocarbons classified under different groups. The lightweight crudes from Pennsylvania, for example, are saturated hydrocarbons with a paraffin base, whereas the dark and heavy crudes from California and Texas are unsaturated hydrocarbons with an asphalt base. Intermixed with crude, as it comes to the surface, will be found sulphur compounds, inorganic matter, brine and nitrogenous properties from the soil, all of which impurities should be eliminated in the process of refining commercial gasoline.

Let us see how this is done, and we will be better able to understand what impurities mean in commercial gasoline.

Process of Refining

The mineral oil or hydrocarbon oil is drawn from the large settling tanks, carefully strained into the stills, the most improved resembling a boiler without flues. Above the stills are condensing coils directly connected. The oil is heated, the vapors rise—the most volatile first—and are condensed to a liquid and flow to the tail-house, where a number of switches are arranged to throw the distillates of various gravities to different tanks when desired for further treatment.

The hydrometer readings tell the operator when to switch. Naturally the first that comes over will be exceedingly light, say 88 gravity, gradually increasing in weight to 87, 70, 60 and 50 Beaume. When the entire distillate in the tank from first to last shows an average specific gravity that is desired, the operator switches, and the flow continues to another tank. This first cut, in the terminology of the refiner, is called crude benzine. Carried along with the distillate are many of the impurities that stood in the original crude. From the crude benzine we recover our gasoline and from now on in the process of refining the operator should be particular.

From the crude benzine tank the distillate is sent over to the agitators, cone-shaped

tanks elevated with valves in the bottom, and connected up with compressed air. This crude benzine is now agitated with solutions of sulphuric acid and water, sometimes litharge, for the purpose of bringing down the sulphur compounds, nitrogenous matter, tar and other impurities generally, called sludge by the operator. This is drawn off at the bottom of the tank. Further treatment is continued by washing with caustic soda solutions and water. The entire treatment is called sweetening. This can be well done or poorly done, depending upon the integrity of the operator. If poorly done the gasoline will still have a bad odor, and contain some of the sulphur compounds, inorganic matter and tarry bases, possibly show some traces of acid and alkali and contain moisture, all undesirable properties in gasoline. Some of the refiners of the midcontinent crude, Oklahoma crude, particularly, have recently adopted the practice of filtering the sweetened benzine through fuller's earth. This is a great improvement in refining; for fuller's earth is a great absorber of the heavy hydrocarbons, and, of course, other impurities as well. From the agitator the crude benzine goes to the steam stills to recover the gasoline and naphtha.

Commercial Gasoline

The process of making commercial gasoline is much the same, using the steam still and the condenser, connected up with the commercial gasoline tanks, but in such a way that hydrometer readings can be made as the distillate goes over. Between the still and the condenser should be installed a trap for the purpose of catching the oily portion of the treated benzine and the heavy hydrocarbons and returning them to the still. They are very undesirable in commercial gasoline, as will appear later. Following the process, the treated benzine is heated in the steam still; the vapors rise and are condensed. They are light at first, say 90 gravity, gradually get heavier as the flow continues, and will register 87, 80, 76, 70, 65 and 60-gravity gasoline. With the light and heavy all in one tank, the refiner stops when the whole shows a gravity that he desires to offer as commercial gasoline. That might be 68, 65 or 60. It is optional with him when he stops the stills and also whether he stops at 60.

To get naphtha the operator switches the distillate, when through with gasoline, into the commercial naphtha tank, and distillation goes on. This will stop anywhere between 50 and 60 gravity, at his option. The residue is drawn off from the steam still to be used for other purposes.

Inasmuch as kerosene is a fuel used in stationary internal combustion engines, and will, the writer believes, be used in power trucks inside of the next year, I might state that it is the fraction that is distilled off after the crude benzine is recovered from the mineral oil; simply a heavier distillate of 48 specific gravity. If treated in the same manner as gasoline and naphtha, the difference is one only of specific gravity, volatility and, of course, heat value.

Please note that where gasoline leaves off, in distillation, and naphtha begins, is arbitrary with the refiner. If gasoline is worth more than naphtha, and it usually is, he can continue distillation for a longer period to the commercial gasoline tank, before making the cut to the naphtha tank, thus increasing his yield of gasoline; provided, however, that the purchaser does not restrict him by specifications of the gasoline he wishes to purchase. This is also true of kerosene, but the state laws specify what kerosene shall be, and the refiner must cut in and out at the proper time from his stills to get evaporative tests.

Refiners will tell you that gasoline ends at 60 and naphtha begins, but responsible refiners are putting out under the name of gasoline a 58-gravity distillate.

Midcontinent refiners will tell you that their 58-gravity gasoline, particularly Oklahoma gasoline, is just as volatile as a Pennsylvania 62. If this be true, and in refining some crudes it is true, the purchase of gasoline by specific gravity alone is not consistent with quality.

Please note also that refiners can get gravities by mixing lightweight gasoline with heavyweight naphtha—light and heavy end mixing they call it—but will this give the gasoline we want for internal combustion engines? Decidedly not.

What is Needed

With a clearer knowledge perhaps of what commercial gasoline is, on the American market, let us now take up its application as fuel to the internal combustion engine. We can then tell better what we want and perhaps come nearer to getting it. In determining gas engine efficiency, whether stationary or applied to the motor car, experimental departments should be posted on the calorific value of fuel consumed, and, from a commercial point of view, the market price.

Unfortunately there do not seem to be any reliable data on the calorific value of distillates refined from crude petroleum, graduating from 85 Beume gravity down to 48 and sold under the trade names of gasoline, naphtha and kerosene. The information that does apply is rather conflicting, possibly due to the variation in the samples obtained. Rather than favor one over the other—and the variation is not large when taken with a calorimeter—19,000 B.T.U.'s per pound of fuel from 85 to 48 gravity is conservative and safe to figure on. Let us refer you to the following table:

Fuel	Specific gravity, Beume	Calorific value per pound	Weight per gal.	Calorific value per gal., Nov. 1, 1910	
				per gal.	per gal.
Gasoline	85	19,000	5.42	102,980	21 c
Gasoline	75	19,000	5.69	108,110	15 c
Gasoline	68	19,000	5.89	111,910	10 c
Naphtha	58	19,000	6.20	117,800	8½ c
Naphtha	50	19,000	6.48	123,120	6 c
Kerosene	48	19,000	6.55	124,450	4 c

Note that the lightweight volatile distil-

lates are the highest priced. That heat values are nearly constant pound for pound, but gallon for gallon they are not. Fuel is sold by the gallon, not by the pound. That kerosene is the most economical fuel, figuratively, and that economy decreases as the volatility increases.

Volatility of Gasoline

Volatility is at a premium because the motor car designer demands it for the operation of his car in temperatures ranging from 95 degrees to zero; and the demand is heavy. Let me state that the volatility of the liquid fuel increases and decreases with the rise and fall in temperature.

Gasoline from 85 gravity down to 70 hardly comes under the head of commercial gasoline today. We find none of it on the market and it can be obtained from refiners only by special order. The refiners are loath to sell their lightweight gasoline, claiming that they need this more volatile product to bring up the volatility of the heavier gravities that come over later from the stills, thereby increasing their yield.

The lightweight gasoline from 85 to 74 gravity is really more volatile than is necessary in operating a car. It is dangerous to handle and is easily wasted. Gasoline from 74 to 70 gravity in extreme cold weather would meet with considerable demand if it were on the market at reasonable figures, but it is not. Gasoline from 68 to 70 is quoted by some refiners, but it seldom reaches the 68 mark. Let us deal with fuels from 68 gravity down. At this gravity a well-refined straight run distillate—one that comes over to the commercial gasoline tank from the steam stills, the cut being made when the gravity stands at 68—is sufficiently volatile to allow any of the carbureters of standard make to mix with it the air; a turn or two of the crank drawing a charge of volume sufficient, when ignited, to start the motor.

Gravity Higher in Winter

Velocity of flame propagation is sufficiently rapid throughout the mixture, if in the right proportions, to give complete combustion, or nearly so. The fuel is sufficiently active to permit of wide ranges of control of the car. Accumulation of deposits, whether carbon or otherwise, would result from sources outside of the fuel. Some of our leading motor car manufacturers specify 68 gravity gasoline and pay the extra price, purchasing in tank cars. Their engines are tested out on this gasoline and so are the carbureters. It might be in order to ask what the effect would be on cars that were tested out on 68 gravity and were sold in territories where 58 to 60 gravity fuel only was available. As a matter of fact commercial gasoline during the summer months will range from 58 to 63 gravity Beume throughout the United States. The average will be 60. In the winter time this is raised about 2 degrees by the refiner, without notice. In the large cities the lightweight fuel prevails, country districts getting the heavyweight. Fractional distillation of much of the heavyweight—58 gravity—gasoline, sold



particularly in the south and west, will show that it is as volatile as some of the 61 sold throughout the east. This is due to the character of the crude.

Effect on Carbureters

Let us see how efficient some of the 58 to 60 gravity fuel is in motor cars, quoting experience in one of our large manufacturing plants. During the hottest weather, 75 to 90 temperature, the cars were started with standard makes of carbureters easily, the volatility of the fuel being greater at this temperature. No complaints were made as to lack of power, control of the car or perfect combustion of the fuel. With the change in the weather to 60 degrees operators could not start their cars easily, and as the weather grew colder it became more difficult. Universally the statement was made that the cars ran all right after starting, implying that combustion was rapid and complete. If this was the case the fault was clearly with the carbureter in not delivering fuel to the cylinders at the start. It is not enough for carbureter manufacturers to state that it is the fault of the gasoline. We must have carbureters that will handle our commercial gasoline as we find it.

Design and heat are the resources of the carbureter men. Motor car manufacturers should be able to discriminate between carbureter efficiency and fuel efficiency. A poorly designed carbureter might condemn a first-class fuel. Experiments should be conducted with the less volatile distillates of naphtha and even kerosene. First, because they are cheaper, and second, because refiners tell us that with the years' increase in the number of motor cars they will not be able to keep up volatility or gravities. Whether this is true or not we can judge by referring to the supply of crude petroleum available and giving the reader an estimate of yields and demand.

A conservative estimate of the yield of 68 gravity gasoline that might be obtained from 179,000,000 barrels of crude would be 8 per cent and 12 per cent of 58 gravity. In round figures 13,000,000 barrels of 68 and 21,000,000 barrels of 58. Estimating that there were 200,000 cars in service in the United States previous to 1910, and that 150,000 cars were added in 1910, the demand for gasoline would run something like this: 350,000 cars traveling 4,500 miles, each consuming 1 gallon of gasoline to every 15 miles, and every car consuming 300 gallons yearly—a total of 105,000,000 gallons; 42 gallons to the barrel, 2,250,000 barrels yearly. Add another 150,000 cars in 1911, and the demand is for another 45,000,000 gallons, making a total of 3,260,000 barrels for horseless vehicles. Add to this the demand for motor boats, a large domestic trade, and a very large export business, and the amount

produced for the year is consumed. Conservatively there were only about 10,000,000 barrels of gasoline produced last year. A great many thousands of barrels of crude were used for fuel oil. If kerosene can be used in motor cars there is available for fuel another 10,000,000 barrels.

No Scarcity of Gasoline

The writer cannot figure that any alarm should be felt over the scarcity of gasoline. In all probability gravities and volatility have been reduced arbitrarily by refiners to work off the heavy distillates that follow the light in process of refining. Bear in mind that the refiner is desirous of selling all the fractions from the crude to increase his profits. On the other hand, we have a large and growing industry that must be protected by the use of suitable fuel. I believe that there is competition enough among refiners and jobbers of the United States to compel some recognition of conservative specifications. Some attempt has been made to purchase gasoline by gravity, but this is only relative, not specific. Fractional distillation will give us more information on the value of the fuel when we consider sources of supply.

Fractional Distillation

Suppose we take the apparatus, or one similar, specified by the National Petroleum Congress, and the Engler method of distillation, drawing 100 cc. of fuel and distilling over at the rate of 10 cc. per minute, thermometer in the vapor. Record the temperature at the end of every 10 per cent, and to the end point.

In making deduction ignore the temperature at which the first vapor goes over the boiling point. Very light hydrocarbons are often intermixed with heavy and would appear quickly in the tube. It is better to use as a basis of estimate the point at which the first 10 per cent goes over. When we are through we will show what the total evaporation of the fuel is within given temperatures. To illustrate let me give three fractional tests of fuel.

Specific gravity Beaume.	70.1	70	58
Distillation	1	2	3
Boiling point	120 F.	88 F.	140 F.
10 per cent at	143 F.	140 F.	170 F.
20 per cent at	153 F.	152 F.	178 F.
30 per cent at	162 F.	161 F.	188 F.
40 per cent at	169 F.	170 F.	195 F.
50 per cent at	178 F.	182 F.	202 F.
60 per cent at	185 F.	195 F.	210 F.
78 per cent at	194 F.	212 F.	220 F.
80 per cent at	205 F.	232 F.	235 F.
90 per cent at	227 F.	260 F.	254 F.
96% per cent at	257 F.	298 F.	278 F.

Glancing at the table the writer would call No. 1 and No. 3 short fractions, a homogeneous fuel, while No. 2 I would term

a long fraction made up in all probability from light and heavy ends.

Drawing a sharp line between carbureter efficiency in delivering fuel, and fuel efficiency in the cylinder, let us take up the latter, and we will, I think, come near to knowing what impurities mean in commercial gasoline. What is desired in a fuel for motor car internal combustion engines is:

1—Cheapness.

2—Greatest calorific value.

3—Rapid and complete combustibility under wide range of temperature surrounding the cylinder.

4—Fuel free from moisture, acidity, and alkali, and sulphur compounds.

The writer has enlarged upon the first two. Omitting the suggestion that motor truck designers experiment with kerosene, the fuel desired embraces the greatest calorific value with the least volume, and the lowest cost per gallon.

We know that we can get both rapid and complete combustion with volatile gasoline, from 70 to 85 Beaume. The problem today is, what is the least volatile gasoline we can use and get both? Experimental departments should make exhaustive tests, analyzing waste gases, and make fractional tests of the fuel used.

Short fractions, those that vaporize within the shortest limits of temperature, are the most valuable distillates. No. 1 of the table is a better fuel than No. 2, both standing at nearly the same gravity. No. 3 at 58 gravity would undoubtedly prove as valuable as No. 1 in the cylinder, although a carbureter might not be able to handle it in extremely cold weather.

In the short fractions the velocity of flame propagation is much more rapid, and consequently we get greater power, and more perfect combustion. When fuels contain moisture, show acid or alkaline reaction, or sulphur compounds, it is due to improper treating of the crude benzene. Gasoline from the unsaturated hydrocarbons is more apt to hold in suspense those impurities, but the large refiners are reasonably careful in removing all traces.

Carbon Deposits in Cylinders

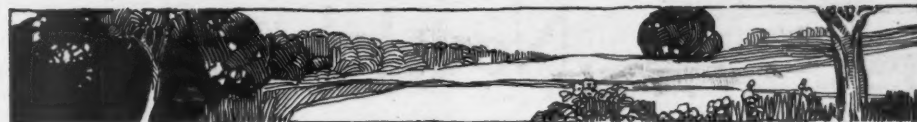
If for any reason imperfect combustion of the fuel takes place in the cylinders during the process of decomposition, the carbon element—always hard to burn—is not converted into carbon dioxide, but is blown out with the exhaust; or in close muffling is often precipitated on spark plugs, cylinder heads, and mixed with the lubricating oil.

By improper feeding, surplus lubricating oil finds its way to the hottest parts of the cylinder, and slow combustion begins of this product. With some lubricating oils employed, particularly those that are refined



from the unsaturated hydrocarbons, oxidation takes place. The process of polymerization is set up. The carbon element from the fuel, dust and dirt drawn in with the air on windy days through the carbureter, and foreign matter from other sources act as a nucleus around which the heavy hydrocarbons gather and adhere to the metal parts. Great care should be taken to install lubricating devices that feed just enough oil, and to the right places in the cylinders.

The motor car market is world-wide. Quick transportation is a problem for all nations to solve. The ox served its purpose at a mile and a half per hour a hundred years ago. This was better than putting one's shoulder to the wheel. The horse, at 5 miles per hour, was an improvement over the ox. The bicycle was a failure because the de-



signer asked us to supply the power. The faster we wanted to go the faster we had to pedal, and the more heat value we used up. Put a motor on a cycle, and the machine is not a failure. A brilliant future is in store for it. The motor car is an improvement over all. The pessimist that thinks the farmer is extravagant in purchasing a motor car should be present when he breaks a plowshare, or his harvester, with twenty men in the field. In less than an hour he is back from town, perhaps 20 miles away, with the repair parts in his car. Eighteen hundred gallons of motor car fuel carefully purchased

and used in a well designed car is equivalent to the work of four sound horses in a year. We try to discriminate in purchasing the horse by asking his age, how much he weighs, what can he pull, whether he will bite or run away, or has any spavins, ring-bones, cockle joints or the heaves. He has no objectionable qualities before purchasing, of course, but they sometimes develop afterward, and horsepower dwindles.

In purchasing our fuel let us be equally discriminating by inquiring the heat values, volatility and freedom from impurities. A discriminating buyer improves the refiner.

Possibilities of Benzol as a Fuel for Motor Car Engine Use

By Henry Hess

EDITOR'S NOTE—The following is a contribution by Henry Hess on F. H. Floyd's paper on gasoline, read before the meeting of the Society of Automobile Engineers, January 11-12, 1911.

And now this coal tar again bids fair to rescue us from the octopus by presenting us with benzol.

One hundred pounds of dry coal coked in a byproduct oven will yield about 68 pounds



NEW GOOD ROADS IDEA

Lancaster, Pa., March 20—A most effective method of advancing the good roads movement has been adopted by the Lancaster Automobile Club, which has the school children of the county studying the good roads question. The high schools of the towns and villages of that county have graduation exercises about this time of year, and each graduate delivers an oration. For the best three commencement essays the club has offered generous cash prizes, making it worth while for the pupils to compete. In gathering the ideas for their essays the scholars will talk good roads with their elders, exciting the interest of the latter in the subject. In declaiming their essays the scholars become preachers of the good roads gospel, addressing crowded audiences, and finally the local newspapers publish reports of the commencements containing the good roads addresses, completing the cycle of good roads publicity. The club is being commended for the bright idea, which is regarded as something out of the ordinary.

M R. FLOYD has shown us that in a relatively short time we shall have reached the limit of production of petroleum distillates suitable for the present type of gasoline motor and carbureter. Some time before that we shall be asked to pay prices that will not be pleasant to contemplate, but that will stimulate the carbureter designer and be productive of a golden harvest for every inventor who is possessed of a good advertising instinct also.

Are we, however, really altogether at the mercy of this limited supply and of those in control of it? It would seem not.

Enormous quantities of coal are daily being converted into coke, and of coal suitable for coking there is a supply in sight for a century or two, even at the progressive rate at which we are using—and largely wasting—our store. Only a small fraction of this coke is being produced in byproduct ovens; yet the byproducts are more valuable than the coke itself.

The chief byproduct is coal tar. The modern chemist has found in this evil smelling and foul coal tar a mine of the most wonderful materials. The first were the aniline dyes, then followed a host of marvelous medicinal products. Only a short time ago Ehrlich was able to announce that his specific 606 was definitely proven to be a cure for one of the world's worst scourges, syphilis, in its many ramifications, and that similar derivatives bid fair to rid the world of sleeping sickness, possibly even of cancer.

coke, 15 of gases, 10 of ammonia water and 7 of tar. We are most interested in the tar, which contains some 40 per cent of light oils, of which again some 65 per cent falls into the benzol class.

Clean benzol has been offered and used for motor car motors in Germany; its use has, however, not been attended with general success, because it was assumed that it could be used with motors and carbureters suitable for gasoline. Tests made with raw benzols, I, II and III have given better results, quite satisfactory in fact; but these are not generally offered, as the manufacturers—the German Benzol Union is practically in control—prefer to market their clean benzol, great quantities of which are absorbed by the chemical industries.

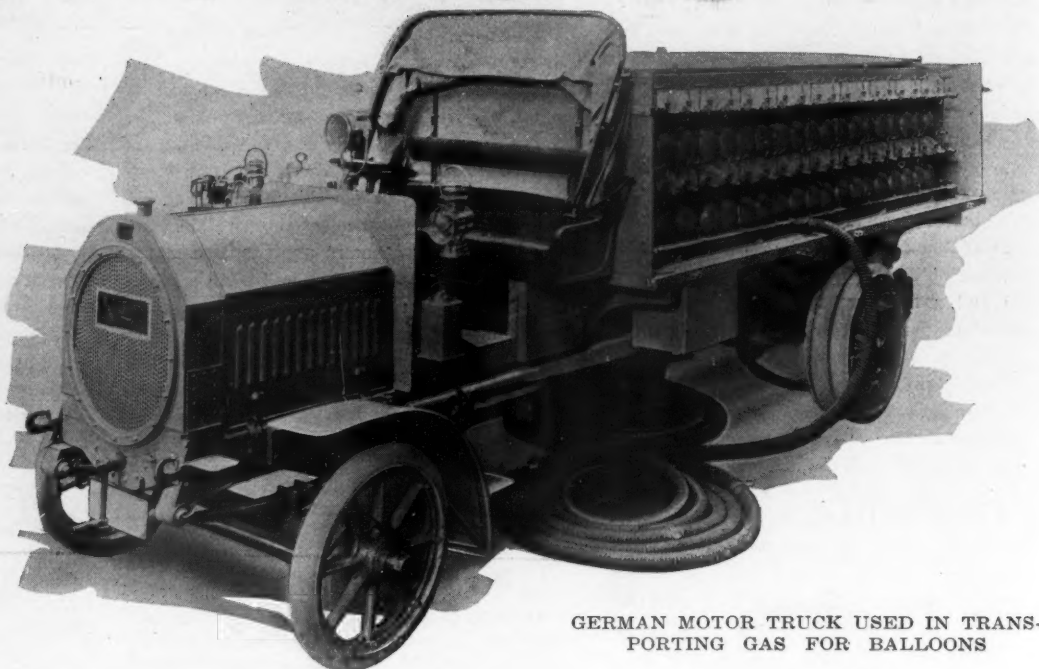
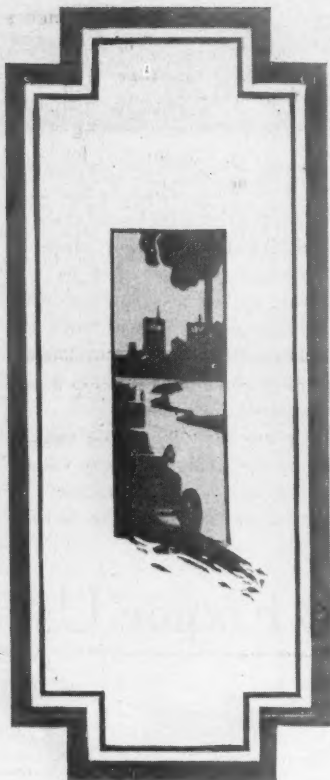
Benzols I, II and III range in specific gravity from 0.890 to 0.883, 0.875 to 0.877 and 0.870 to 0.872, a maximum range in any one grade not exceeding 0.003 and in all three of only 0.013.

Not only these three grades but others, known as Toluol and Xylol, are eminently suitable for motor car use. One hundred pounds of coal yield 1.38 pounds of benzol, of which about 1 pound is a suitable automobile fuel. Already there are being installed in the United States many byproduct coke ovens. The day is not far distant when the old, wasteful type of coke oven will be a relic of the past. We convert at present many thousands of tons of coal into coke each year. That would yield 1 per cent, or many hundreds of tons of suitable fuel benzols and make the motor car user independent of the present petroleum products.

The bulk of the data cited is taken from a book in German by Dr. Ostwald, Autler Chemistry, being No. 39 of the Autotechnical Library, an exceedingly useful set of publications costing only about 70 cents each.



Novel Uses for Motor Trucks



GERMAN MOTOR TRUCK USED IN TRANSPORTING GAS FOR BALLOONS

FOR TRANSPORTING BENZINE

IN connection with the tank car recently constructed by H. Büssing of Brunswick, Germany, danger connected with the transporting and discharging of benzine tanks is avoided by the use of safety armatures and special conduits, valves and connections which are so designated as never to allow the combustible liquid to escape even in the event of a breakage or leakage, as well as by an automatic supply of non-oxidizable gases. The tanks are charged by connecting a pump through a line of hose to the railway cisterns to be emptied, the level of the liquid being read from a gauge tube.

The discharging of the tank is carried out as follows: After reducing the pressure, non-oxidizable gases driving the combustible liquid through a breakage-safe valve to the place of consumption, are mechanically supplied from gas bottles through valves of special design. A convenient and substantial isolation protects the contents of the tank against any heating due to outside fire, while safety fuse stoppers and valves are used to counteract any surplus pressure.

The reservoir containing the fuel for the operation of the motor is likewise protected against any danger due to outside fires, by the supply of non-oxidizable gases, the use of breakage-safe conduits and connections and a convenient isolation.

SOUNDS GOOD, ANYWAY

An interesting story of a new use for a motor car comes from a Bay state motorist who is in the ice business. Out on one of the ponds where a company was harvesting ice it was noticed that the crop of one concern was a couple of inches thicker than that of a competitor. An

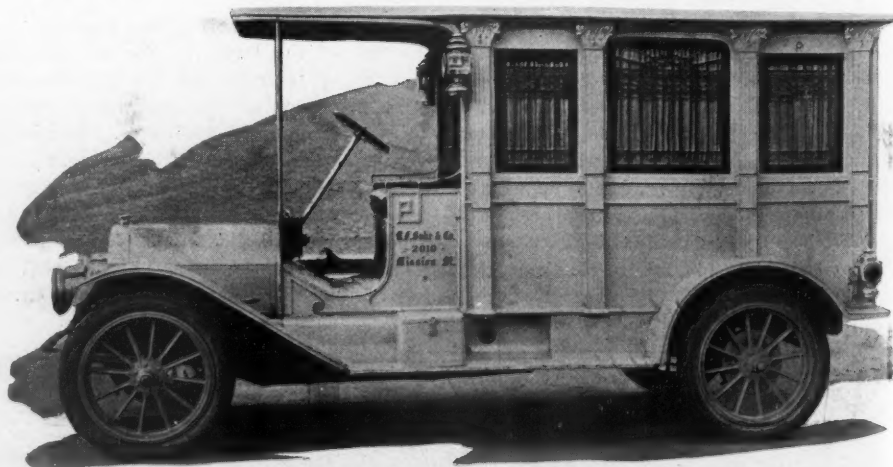
investigation showed that the head of the company that had the thick ice had been using his motor car as a freezer with good results. He first had the field grooved as is done always before a cut is made. Then he ran the heavy car on the ice and for several hours he ran it around, up and down, and across the pond. Being acquainted with the scientific principle that crystallization is hastened by a little vibration, the motorist applied it to the crystallization of water into ice. The machine kept up a constant vibration all over the pond, with the result that the company was able to get a fine harvest of ice considerably thicker than its competitors.

CARTERCAR UNDERTAKER'S RIG

One of the latest cars produced for undertakers has a Cartercar chassis of 35 horsepower. The car was built for M. F. Suhr & Co., 2919 Mission street, San Francisco, Cal., and is now in service.

TWO IDEAS IN ELECTRICS

On order from Berton A. Spring of Grand Rapids, Mich., the Waverley Co. has turned out a new type of electric ambulance, while the same company has made for A. S. Bentley of Chicago what is said to be the first electric hearse ever built. The spring ambulance is a vehicle 13½ feet in length over all by 4 feet wide and something more than 8½ feet high. The inside length is 8 feet 4 inches, height 5 feet 8 inches and width 3 feet 6 inches. The exterior is finished in a neutral gray and the interior upholstered in goat morocco. A folding couch occupies one half of the car and on the opposite side are three folding seats for attendants. The ambulance is provided with both rear and side doors, plate glass windows and screened ventilators. It is equipped with electric lights, electric heater, removable stretcher with mattress, surgical basin and other useful appliances. The Waverley hearse is something



CARTERCAR USED BY A SAN FRANCISCO UNDERTAKER



GERMAN TRUCK USED TO CARRY
BENZINE

more than 12 feet long over all with an inside length of 8 feet, width 3 feet and height 57 inches. The interior is finished in polished mahogany and arranged with a folding shelf, the letting down of which divides it into two compartments.

A GAS-TRANSPORTING CAR

A special type of motor car has been constructed by the Neue Automobil-Gesellschaft for supplying dirigibles, in the case of an unforeseen landing or during maneuvers, with hydrogen gas for replenishing purposes. This car has a chassis of the type subvented by the German army, and is fitted with a 45-horsepower four-cylinder motor. The car body contains eighty hydrogen bottles, each 5 cubic meters in capacity, submitted to a pressure of about 150 atmospheres and fixed in position by screws after loosening which they are readily removed. They are arranged in four layers with their tube connections alternately on the left and right-hand sides of the car. As the center lines are located vertically above one another, each four bottles could be fitted with a common vertical conduit terminating in a substantial U-shaped main pipe which surrounds the gas bottles, allowing the charging hose communicating with the balloon to be connected at will on the left-hand, right-hand and rear sides of the car.

PORTLAND BUILDS A TRUCK

Invented and perfected by an Oregon man, built in Portland with the exception of a few intricate parts, is the record of a 5-ton Webfoot truck just finished by C. J. Cook & Co.'s engineers. As it now stands the car is a sand, dirt and gravel wagon. The large expense of hundreds of horses and mules with the cost of the upkeep of the wagons is a big item. It was to reduce this cost that the manufacture of a truck was first suggested.

The contracting firm has been using motor dump wagons, the dumping apparatus operating by cable and a windlass. The new dumping apparatus is operated by machinery, direct power being had with the engine, by means of a drivingshaft operated by a lever back of the driver's seat.

One of the features of the car is that it is unnecessary for the driver to leave his seat to dump the contents. The body, consisting of a heavy steel box, is mounted on iron bars similar in character to railroad iron. This is mounted on cast iron spools set in roller bearings. The body, under the power of the engine, moves rapidly backward or forward at the command of the driver. The tail gate operates automatically when dumping, and locks through a lever placed at the driver's back.

Probably the greatest feature to the

average onlooker are the wheels. They are very heavy, with steel tires, 4 inches broad and 1 inch thick. These wheels, mounted on roller ball bearings, spin with ease, thereby lightening the strain on the engine. Although one roller bearing would be sufficient to carry the biggest load the contractors could set on the car, every wheel has been provided with a double set.

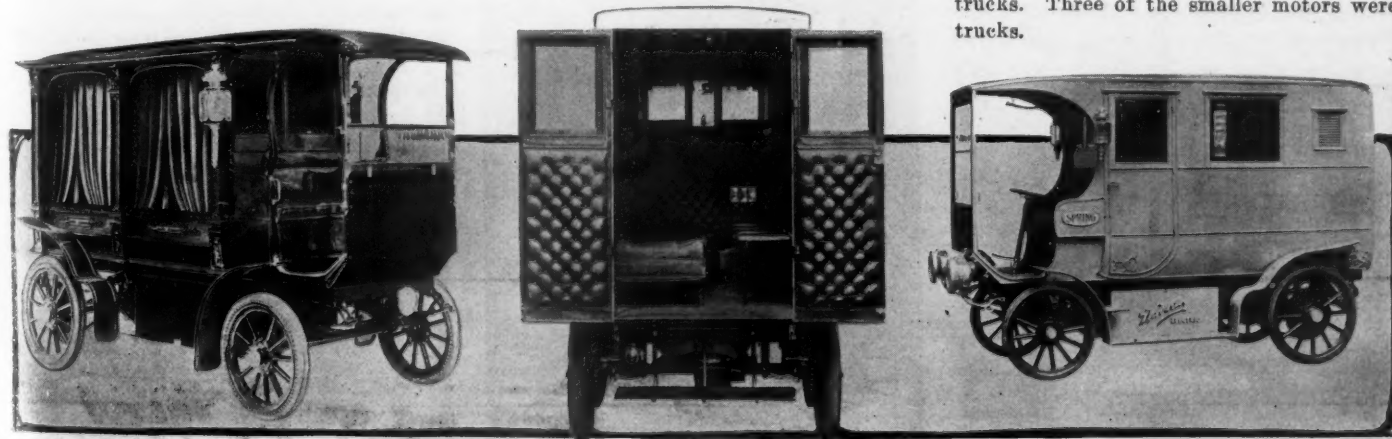
REO DEMONSTRATES ECONOMY

Two tests of the economy of operation of the commercial motor wagon as made by a prominent concern, the Breisch Milling Co., are reported by the Reo people. The first test covered 88 consecutive working days in the months of October, November, December and January last past. The second consisted of an 18-day test, in which a horse and a model H Reo motor truck were used side by side for 18 consecutive working days in the delivery of flour to the local trade. During the 4 months the Reo truck made 2,171 deliveries in 621 hours aggregating 925,623 pounds, which is an average of less than 17 minutes per delivery, twenty-five deliveries per day and 426 pounds for each delivery. In the 4 months there were 2,784 miles covered, which is an average of nearly a mile for each delivery. There were used 290 gallons of gasoline and 25½ gallons of oil, the cost of which averaged 2 cents per mile delivery of 426 pounds each.

In the 18-day Reo truck and horse test the truck made 418 deliveries in 114 hours, covering 560 miles at a total cost of \$8.76, or an average cost of 2 cents per delivery, whereas the horse made only 132 deliveries in 133 hours, covering 110 miles at a total cost of \$7.49, or an average cost of nearly 6 cents for each delivery.

BIG SHIPMENT OF TRUCKS

The Alden Sampson Mfg. Co., the truck division of the United States Motor Co., several days ago established what is claimed to be a record in motor truck shipments for 1 day when \$80,000 worth of freight and delivery motors were sent on their way from the factories to all parts of the country. This amount represents the value of thirty-eight Sampson vehicles. Thirty were of 1,000 pounds capacity, six were 5-ton trucks, and two were 4-ton trucks. Three of the smaller motors were trucks.



WAVERLEY ELECTRIC AMBULANCE AND HEARSE, INNOVATIONS IN THEIR LINE

Metz Runabout as It Is in Improved Form

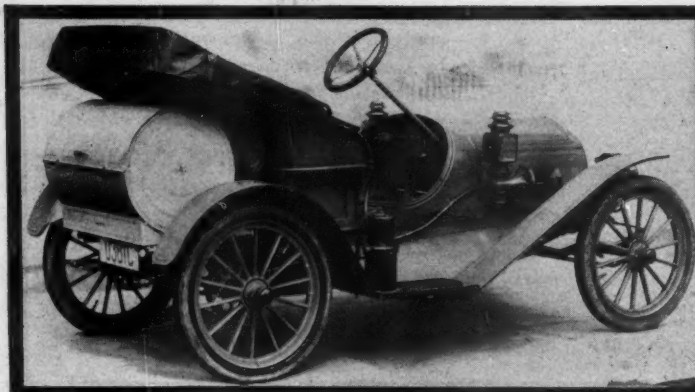


FIG. 1—METZ RUNABOUT FITTED WITH PARCEL CARRIER

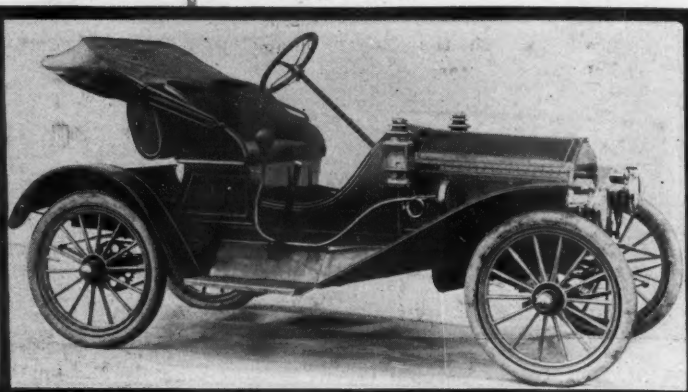


FIG. 2—METZ RUNABOUT COMPLETE WITH TOP

NO longer is the Metz runabout delivered in a series of crates to the buyer, who, according to prescribed directions, assembles it into a car himself, or has it done by some garage man. The Metz runabout for 1911 is a complete two-passenger car marketed exclusively through the dealers, and completed, painted, and ready for the road. Figs. 1 and 2 show the car as a finished product. Fig. 1 is an exclusive pleasure runabout, whereas in Fig. 2 a large cylindrical parcel carrier is mounted on the rear, and various packages can be carried in same, as illustrated in Fig. 4. The cylindrical carrier resembles an overgrown gasoline tank.

The best general conception of the Metz runabout can be obtained from the chassis illustration, Fig. 9, which shows the two-cylinder opposed motor mounted transversely in front and driving through a long shaft S, which carries on its rear a friction disk D. Contacting with this friction disk is the friction wheel W, with its fiber face. This friction wheel is slid on the jackshaft so as to contact at different points with the disk D, thus giving the desired forward speeds, and, when moved beyond the center, to the right side of the disk, gives reverse. From the jackshaft side chains transmit to the rear wheels. Both axles are tubular construction and the front and rear wheels are carried on cup-and-cone ball bearings. The framework is a pressed steel construction

with supports in the form of four elliptic springs, two at the front and two at the rear. The wheelbase measures 81 inches, and the tread 48, or 56 if desired. A novel method is used for obtaining a wide tread, and which is shown in Figs. 7 and 8. When a narrow tread is used, the wheel fits in on the axle leaving the long hub sleeve S at the outside; whereas, when the wide tread is needed the wheel position is reversed, so that the long hub S is at the inside. The length of the hub S is sufficient to make the difference in tread from 48 to 56 inches, when reversed as stated.

Perhaps nothing is more interesting in running gear construction of the Metz than the multiple-disk brakes, which are formed in a corporate part of the rear

wheel hubs. In Fig. 6 this brake arrangement is illustrated. The hub H takes the wheel and has an expansion part H1 within which the multiple-disk brake is carried. This expansion part also carries the sprocket S for chain drive. Into the hub H1 is rigidly secured a disk carrier C, one set of the brakes anchoring to this carrier at their peripheries. The other set of disks attaches to the stationary axle A. By means of a lever L the disks are engaged, that is, they are forced together, the action being identical with when a multiple-disk clutch engages, only the action being opposite, namely, reducing the speed of the hub H1. The brakes are released through a pair of springs SI, which surround the studs for transmitting the movement from the lever L to the disks. This use of multiple-disk construction for brakes is not a new one in America, a brake of similar construction, but with fewer disks, having been used some years ago on the Glide cars.

The details of the Metz motor appear in Figs. 3 and 5, it being a two-cylinder, air-cooled type, with flywheel forming the fan. The cylinders, with 3.3-inch bore and 3.5-inch stroke, have a rating of 8.7 horsepower. Each cylinder is an L construction, having an air-cooled valve chamber on the upper side of the cylinder head. Both intake and exhaust air valve are mechanically operated, the exhaust being to the rear so as to afford an easy con-

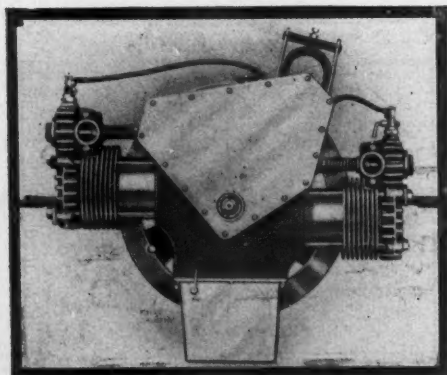


FIG. 3—FRONT VIEW OF MOTOR



FIG. 4—THE PARCEL CARRIER

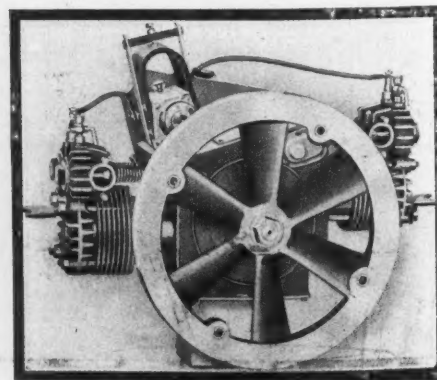


FIG. 5—REAR VIEW OF MOTOR

nection by a straight exhaust manifold from each valve to the muffler, which is carried transversely amidship. The cylinder construction employs removable air-cooled cylinder heads, these being attached to the cylinder wall by four studs, which pass through the cooling flanges and enter the crankcase, thereby playing the dual role of anchoring the cylinder head in place and binding the cylinder to the crankcase.

A constant level, splash system of lubrication for the motor is used, the circulation being maintained by an automatic pump. The oil reservoir has a capacity of 2 quarts. But one set of ignition is employed, and that is a Bosch magneto mounted on top of the crankcase and driven by direct enclosed gears. A short length of wiring from the magneto to the two plugs can be seen in Fig. 5. The method of enclosing the gears for driving the magneto is shown in Fig. 3. A fixed spark is used.

The equipment of the Metz runabout includes 28 by 3-inch pneumatic tires, a top, two gas lamps and generator, and the usual tail lamp, together with horn, set of tools and tire repair kit. Both sets

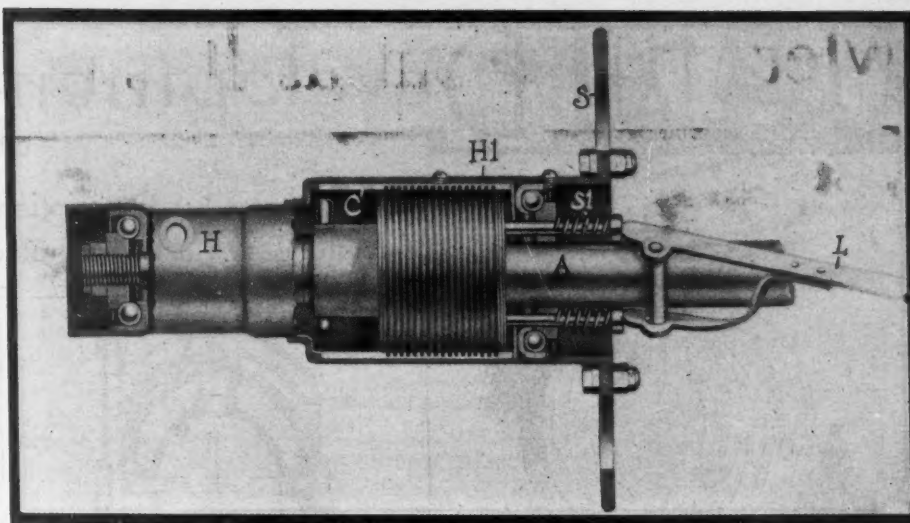


FIG. 6—MULTIPLE-DISK BRAKES USED ON METZ

of elliptic springs are 36 inches long. In the friction transmission set, Fig. 9, the disk D is moved rearward to contact with the fiber-tired friction wheel W. This rearward movement of the disk is accomplished by carrying on the forward end of the shaft S a spider S1, which has a sliding connection with the flywheel through four studs carried in the flywheel rim, these studs passing through eyeholes in the arms of the spider S1. The control of this is by pedal. The brakes are also pedal controlled, but the sliding of the friction wheel is by side lever.

MOTOR CAR LITERATURE

A conventional commercial catalog is that of the Cortland Motor Wagon Co., Cortland, N. Y., which details its commercial cars for the 1911 season.

Those interested in the subject of tops will find timely information in catalog No. 11 from the Vehicle Top & Supply Co., St. Louis, Mo.

A particularly interesting booklet from the Moline Automobile Co., Moline, Ill., tells a day-by-day story of the Dread-

nought in the 1910 Glidden tour and how it won the Chicago trophy in that tour. The book is attractively decorated and the many illustrations emphasize the difficulties encountered and overcome on the tour.

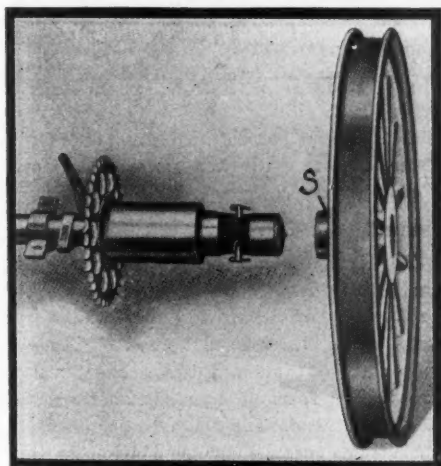


FIG. 7—REAR AXLE SHOWING WHEEL AS ATTACHED FOR WIDE TREAD

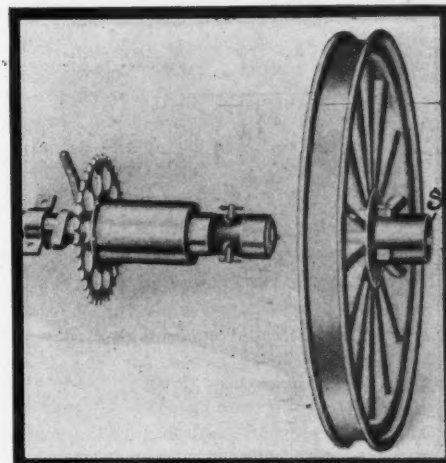


FIG. 8—REAR AXLE SHOWING ROAD WHEEL AS ATTACHED FOR NARROW TREAD

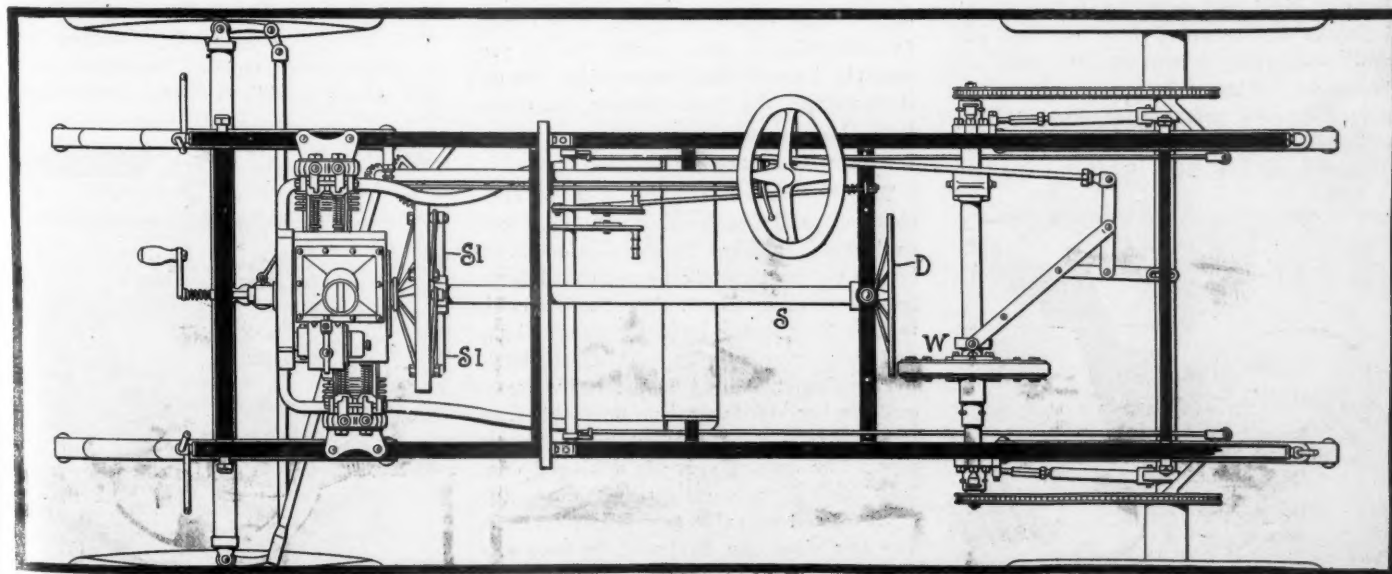
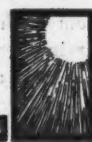


FIG. 9—PLAN ILLUSTRATION OF METZ RUNABOUT SHOWING FRICTION TRANSMISSION SET



Development Briefs



Brief and Concise Descriptions of Motor Car Parts Illustrated

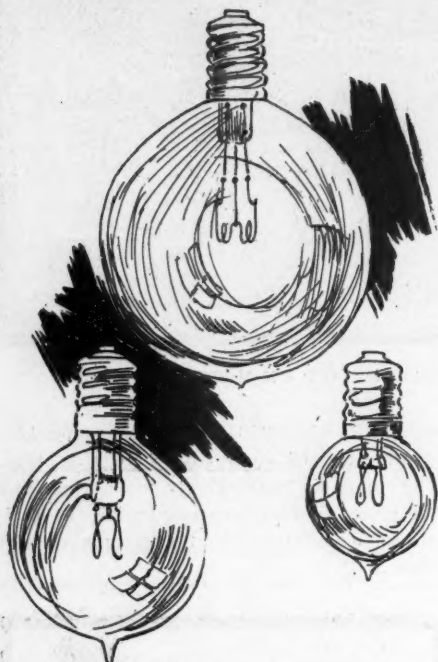
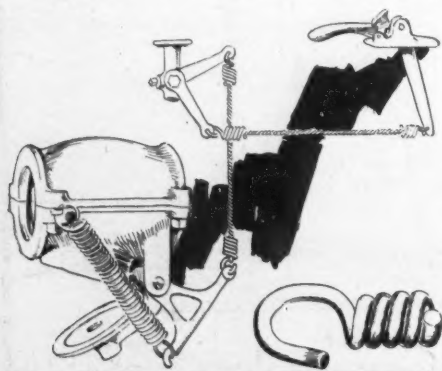


FIG. 1—MAZDA LAMP BULBS

A SPECIAL bracket has been brought out to facilitate fitting the Atwater-Kent uni-sparker to Ford, Maxwell, and other cars, the F. R. Parker Co., Boston, manufacturing the device. This bracket, as illustrated, supports the uni-sparker and also carries the bevel driving gear. Other designs of brackets are made for Mitchell, Buick, Franklin, and other makes of cars. The design illustrated is for the Ford, models N, S, R, and R roadster.

L-N Car Switch

The L-N switch, Fig. 6, is designed to care for the full equipment of electric lights on a motor car, and also has a socket to take direct the plug for an inspection lamp. With this switch the tail light can be turned alone; next the tail and side lights in combination; third, the tail, side and headlights; and lastly the tail and headlight. This arrangement gives the operator every combination desired. The switch is designed to rest flush with the dash, having the connections for the bat-



FIGS. 2 AND 3—FOWLER MUFFLER CUT-OUT AND CABLE HOOK

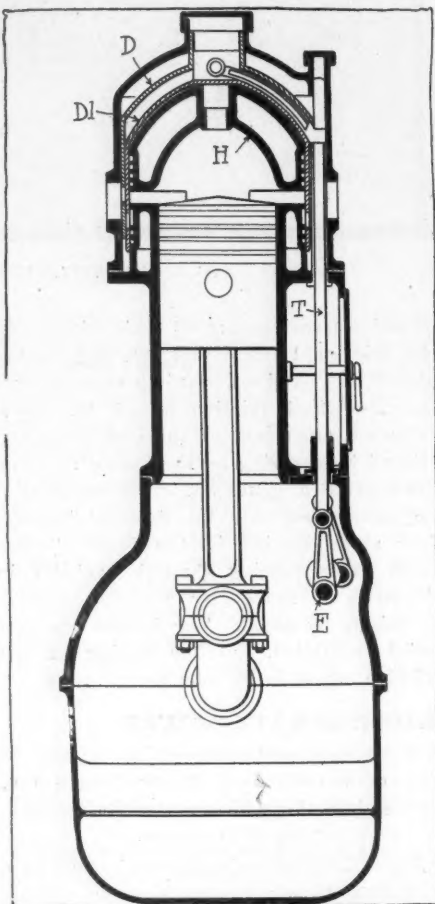


FIG. 4—THE DOME VALVES

tery and lamps on the back, there being one screw connection for the battery, one for the tail lamp, one for the two side lamps, one for the two head lamps, and one for the inspection lamp. The handle for operating is made removable to protect the battery and lamps when the car is standing. The Leece-Neville Co., Cleveland, O.

Two Fowler Accessories

The Fowler cable hook, Fig. 3, is a useful hook for connecting cut-outs, break cables, etc., in cars. This device ends in a hook and has a closely wound spiral forming a left-hand thread. To attach a cable to this hook catch it in a vise or clamp and then screw into the spiral of the hook.

The Fowler cut-out and relief-valve is made in two sizes and from malleable iron. It is designed to be inserted in the exhaust pipe. The cut-out valve is a hinged door held closed by a spiral spring and adapted to be opened by cable from the footboard. The two sizes can be bored to take any size of exhaust pipe. No. 1 covers pipe 1½-inch outside diameter to 2¾-inch out-

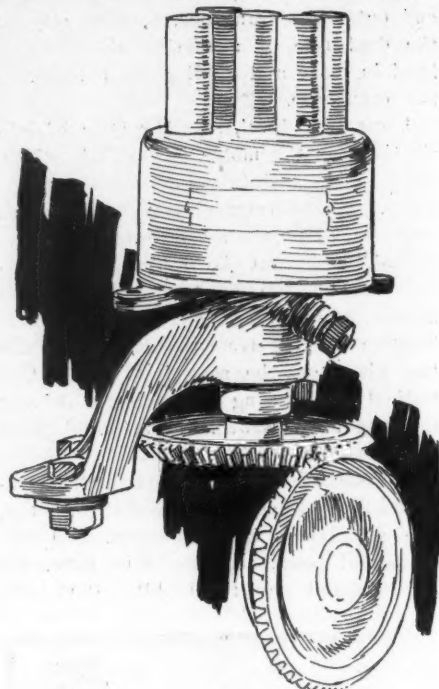


FIG. 5—FORD UNI-SPARKER BRACKET

side diameter; and No. 2 size covers pipe from 2¾ to 3 inches outside diameter. Fowler Lamp & Mfg. Co., Chicago, Ill.

Dome Motor Valves

The introduction of the slide-valve motor a few years ago has resulted in the production of what is called the dome-valve type, illustrated herewith. In this motor the intake and the exhaust valves are in the form of two concentric domes D and D1, located in the cylinder head and operating outside of a stationary and water-cooled head part H. These domes or valves are reciprocated by tappet rods T driven from an eccentric shaft E within the crankcase. The domes have horizontal ports for the admission of mixture and liberating the exhaust. They work in oil and are encased within a dome-shaped

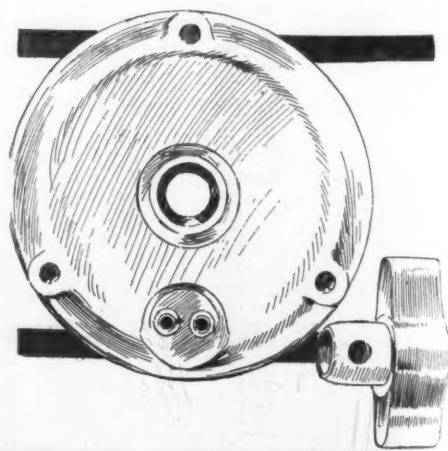


FIG. 6—L-N SWITCH FOR ELECTRIC LIGHTING SYSTEM

cover. They are made very light and possess a novel feature of being automatically balanced by the gas pressure in combination with a mechanical balance. The engine is claimed to be economical. It has been brought out by the Dome Valve Gas Engine Co., London.

Felt-Lined Manifold

A novelty in the manifold field is one manufactured by the Non-Carbon Manifold Co., Kansas City, Mo. This manifold is a Y design, lined with felt. The purpose of the felt is to absorb the liquid gasoline which has condensed in the manifold or been carried from the carburetor in that form. The object of absorbing the gasoline is to prevent it entering the mixing chamber, where it might result in giving too rich a mixture.

Leak-Proof Piston Rings

The Leak-proof piston rings, manufactured by McQuay-Norris Mfg. Co., St. Louis, Mo., are made from what is known as Rogerized gray iron, which is used because of the great amount of elasticity it is claimed to possess. Each ring is made up of two rings each of L cross section. The rings are concentric with the triangular splits diametrically positioned. By using concentric rings with opposite splits an even pressure all around the cylinder wall is claimed. This is further claimed to avoid carbonizing of the oil in that oil cannot work past the rings so readily as where the rings bear with greater force against the cylinder wall at one point than at another.

Self-Cleaning Plug

The N. Y. Mica & Mfg. Co., Auburn, N. Y., is marketing a self-cleaning plug, the principle of which is illustrated in Fig. 9. This plug, by way of construction, consists of an insulation A made up of mica washers compressed under pressure of 2,000 pounds. Containing this insulation is a brass bushing B forming a gas-tight joint with A. The self-cleaning feature is a compression space C within the brass bushing, and in the plugs are six holes D through which the gas can enter and leave the compression space. The mica bushing is tapered at E so that the outrushing gas through these holes is directed against the points F where the spark takes place, so that ac-

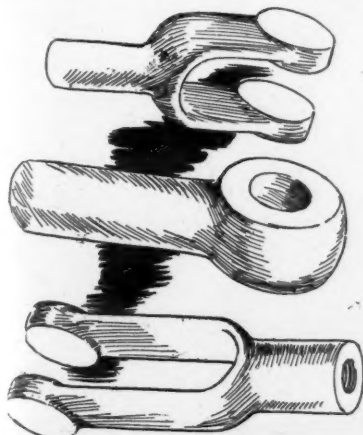


FIG. 8—B. & S. YOKE ENDS

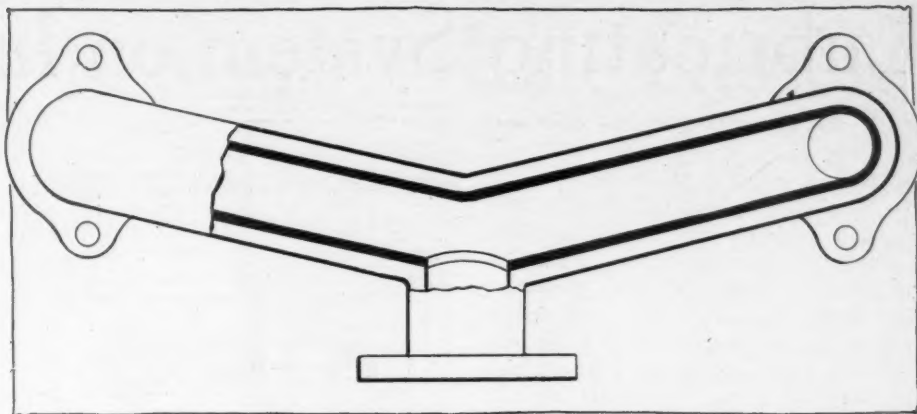


FIG. 7—FELT-LINED INTAKE MANIFOLD

cumulations of carbon are driven from these points by the outrush of the gases. The holes D are also tapered so as to direct the gases at this point. The modus operandi of the plug is as follows: When the compression takes place in the cylinder an equal compression occurs within the chamber C, and when the compression in the cylinders is released the gases rush out of the chamber C as stated.

B. & S. Yoke Ends

A new design in yoke and rod ends is being marketed by the Billings & Spencer Co., Hartford, Conn. These designs, illustrated in Fig. 8, are intended to permit of the greatest radius of action with the least weight. The short stub-end is grounded to facilitate electric welding. These yoke and rod ends are furnished either in blanks, milled or assembled.

Ideal Tire Sleeve

More attention than usual was shown this year in the matter of reinforcing sleeves to be placed inside of the tire casing to prevent puncture or resist blow outs. The Ideal sleeve, manufactured by

the Voorhees Rubber Mfg. Co., Jersey City, N. J., is made of cotton duck from four to seven plies in thickness, according to the size of the tire. This sleeve is made with a flap on each side, which lies under the bead of the tire and is anchored between the bead and the rim and is so held in position. This patch was illustrated in Motor Age issue of March 16.

Delayed Illustrations

On these pages are illustrated some devices recently described in conjunction with the Boston show. Fig. 1 shows the Mazda electric bulbs for head, dash and tail lamp described in Motor Age March 16, page 35. Fig. 10 shows the Scheu High-Low headlight controller described in Motor Age, March 9, page 17. Fig. 11 illustrates the Simplex gas regulating valve, which feeds the gas to headlights at a predetermined rate, so that too much gas cannot be fed when the lights are first turned on or at any other time.

The Inner Casing

What is known as inner casings are being marketed by the Western Automobile Supply Co., Chicago. These inner casings are designed to fit around the inner tube in order to protect it. This protector is made of one thickness of specially woven duck. The inner tube is placed inside of it and then the casings is laced together along its inner face.

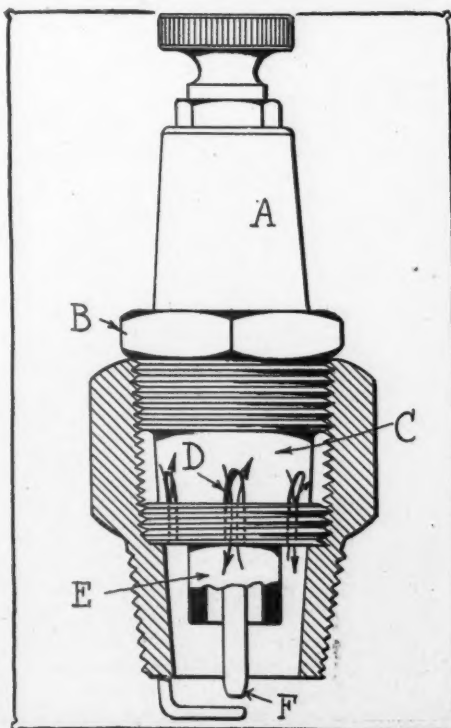


FIG. 9—SELF-CLEANING PLUG

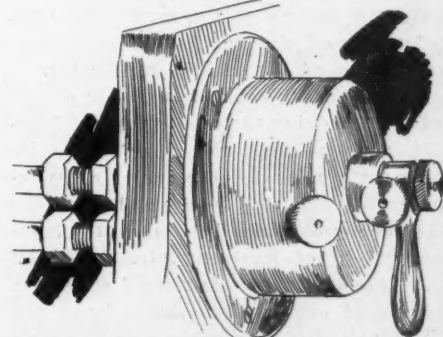


FIG. 10—SCHEU'S HIGH-LOW CONTROLLER

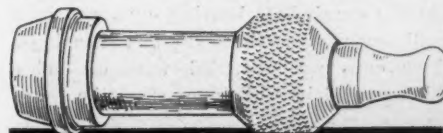


FIG. 11—SIMPLEX GAS VALVE

Lubricating System on Inter-State 50

ON the Inter-State 50, the company's new motor, a circulating oiling system is used, which is illustrated herewith. The circulation is maintained by a gear oil pump. This oil pump, as Fig. 1 shows, is gear-driven from the intake camshaft S, and the pump itself distributes the oil to three ducts or outlet pipes. One pipe C leads to the rear crankshaft bearing; one D to the front crankshaft bearing, and one B to the center crankshaft bearing and the sight feed on the dash. There is the supply pipe A from the oil reservoir.

The pump is mounted directly upon the crankcase, and is driven by the inlet camshaft, which is extended through the crankcase for this purpose. As the pump is joined to the case with an oil-tight joint, the use of stuffing boxes or packing glands is eliminated, and all oil which otherwise would leak out around the driving shaft and be thrown over the motor, drains back into the crankcase. There are only two outside connections to the pump—the one, A Fig 2, which supplies the oil, and the one B which is carried to the sight feed upon the dash.

The oil which is discharged into the sight feed is carried from there to a connection in the crankcase between the second and third cylinders, and passes through a duct into an oil pocket directly over the center crankshaft bearing. The front and rear crankshaft bearings are supplied with oil by tubes which are entirely contained within the crankcase, and are directly connected to the distributing ducts in the oil pump body.

The oil which overflows from the pockets over these bearings is retained in the false bottom E of the oil pan to a depth governed by the location of overflow holes.

The false bottom is provided with dividing webs F to prevent the oil washing backward and forward under uneven road conditions, and upon grades. There also are pockets G which allow the passage of the splash spoons on the connecting rods, and retain oil for supplying these spoons irrespective of the position of the car.

These splash spoons perform the double function of oiling the connecting rod bearings, and splashing the oil over the interior surfaces of the crank case and cylinder walls. They are hollow and allow the oil to be directly introduced upon the bearing surface of the crankpin. As they strike the oil on the downward stroke, it is splashed over the camshafts, push rod rollers, and into the piston. The oil which strikes the sides of the crankcase drains into the crankshaft bearing cups and into small cups over the camshaft bearings. These cups are provided with oil holes which extend into oil grooves on the bearing surfaces, and insure proper lubrication of these bearings.

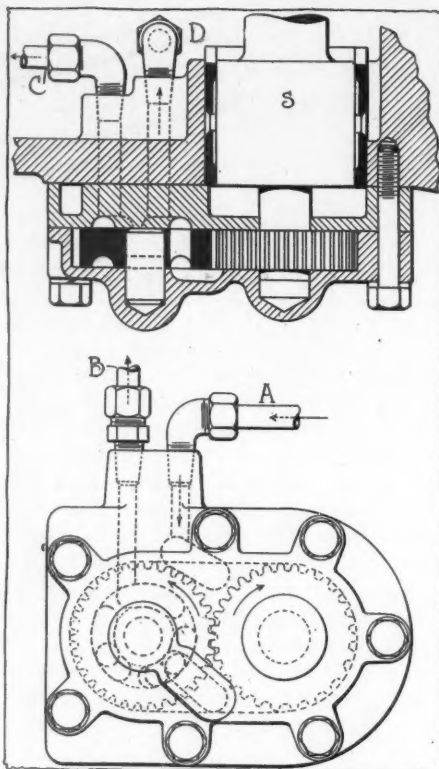


FIG. 1—INTER-STATE OIL PUMP

In addition to the oil hole which passes through the splash spoons, the connecting rods are further provided with oil holes which convey the oil which drains down their surface to the connecting rod bearing.

The cylinder walls are lubricated by oil which is splashed directly upon them, and

this is supplemented by a device in the piston. A collecting ring is formed around its lower end, on the interior surface, which collects the oil which is splashed into the piston, and which runs down the inside. Small holes are drilled through the piston wall from this ring into a distributing oil groove on its outer face, and through these the oil is introduced directly upon the cylinder walls. This oil lubricates the piston rings, and also the piston pin bearing by means of an oil groove which collects all superfluous oil, and conveys it to the piston pin bearing through oil grooves in the bearing surface.

The oil which flows through the overflow holes in the false bottom of the oil pan passes into the oil reservoir R immediately underneath it. This reservoir is constructed with dividing webs so that all flooding which might occur from the wash of the oil upon uneven road surfaces is avoided. This reservoir is provided with a settling pocket which collects all sediment or foreign substances in the oil, and is equipped with an accessible oil plug for draining and cleaning.

Oil is supplied to the system through a filler tube, accessible upon the lifting of the hood on the left-hand side of the car. This tube is raised to the height of the cylinders to facilitate filling, and discharges directly into the crankcase.

There are three petcocks on the side of the oil reservoir, arranged at points which will enable the operator to determine the quantity of oil in the crankcase.

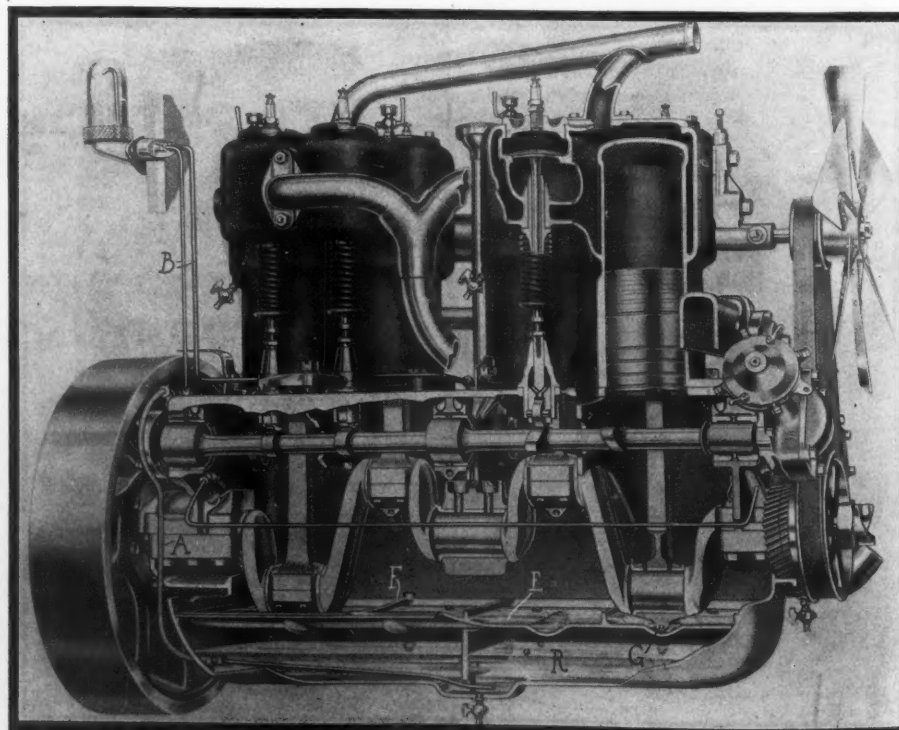


FIG. 2—GENERAL VIEW INTER-STATE 50 OILING SYSTEM

The Motorists' Bookman—Late Reviews

TO him or her who would know the childhood, the works and the inventions of Thomas Alva Edison, the great electrician of the age, let him or her read "Edison, His Life and Inventions," by F. L. Dyer and T. C. Martin. The story is the most interesting one that the history of electricity has to unfold. It is graphically told in two volumes, 786 pages in all, added to which is an appendix of 200 pages in which all of his different important inventions such as the stock ticker, automatic telegraphy, wireless telegraphy, the telephone, the phonograph, the moving picture machine, the electric light, and a score of others are completely described and illustrated for the benefit of the reader who wants to know the exact details of their operation and the theory of their work.

The main story is the most interesting romance of science the world has ever known. It is the life of one who since childhood has averaged almost 18 hours out of every 24 in an endeavor to unravel the mystifying thread of electricity and harness it to the industries of the century. Every line of the narrative breathes of Edison and every word suggests the all-permeating influence of electricity upon the present and last century. The narrative is written by two people who knew Edison: Mr. Dyer was general counsel for the Edison interests and knew every phase of the inventions and every motive of the inventor; and Mr. Martin was a familiar friend of the inventor.

The opening chapter reveals the thread of youth from birth at Milan, O., in 1847, up through his boyhood days at Port Huron, where he persuaded a fellow school chum to swallow a large quantity of Seidlitz powders in the belief that the gas generated would enable him to fly. At school when a lad of 11 he got a copy of a book of physics and soon had a laboratory in the cellar, where he performed experiments and tried to work out with his chemicals everything that he read. At this time he sold newspapers and a year later was newsboy on the train between Port Huron and Detroit. Soon he had a small space in the baggage car fitted up as a laboratory and performed his experiments after he had sold his papers. During war times he did a wholesale trade in papers between Detroit and Port Huron and printed a paper of his own, *The Herald*, having the printing press on the train and doing the work while the train was running. All this ended one day when a stick of phosphorus, with which he was

Edison's Life and Inventions

experimenting, fell on the floor, took fire and nearly burned the car up. The conductor boxed his ears and his after deafness was due to this. In those days he learned telegraphy, working from 11 o'clock at night until 2 or 3 in the morning with special instruments and over a short wire connected with the home of a neighbor boy. Acquiring the art soon led to a job of telegraph operator, which vocation he followed for years, one time in Canada, next in Port Huron, then Cincinnati, then Memphis, then New Orleans and then Boston. When at telegraphy he generally got a night job, which gave him much spare time during the day to perfect little inventions in telegraphy that he made use of. He soon became an expert operator. His first recorded invention was when a night operator in Stratford, Ont. At periods during the night he had to send a signal to show that he was awake and on duty, and he devised a small wheel with notches on the rim and attached it to the clock so that as the hours came round the wheel revolved, the notches sent the dots and dashes accurately over the wire, while the operator slept. The invention was a success.

When 21 years of age he landed in Boston with the Western Union doing special operating for the Boston Herald, and it was his speed in this work that brought him into special prominence. The night work here gave him idle hours in the day and he employed it in reading every scientific book he could secure, going without ordinary clothes that he might secure complete sets of Faraday and other works. The whole intellectual atmosphere of Boston was favorable to the development of his brooding genius. He spent hours of his leisure day time in electrical shops in the city, and on October 11, 1868, applied for his first patent, No. 90,646, which was on a voting device to be used in the House of Representatives at Washington. Before a year in Boston, Edison had invented a stock ticker and duplex telegraph, both of which he tried to dispose of in New York. He borrowed \$800 to try out his duplex telegraphy over a line from Rochester to New York.

In 1869, 22 years of age, he landed in New York in debt, with nothing but a few books and instruments, and had to borrow money for his first breakfast. He soon got his first job for fixing a ticker used in the Gold Room, the stock market for precious metals during the war days. He was immediately put in charge of the whole system at \$300 per month. This was his first big upward step and the beginning of his remarkable career, which has continued until the present day. The

work on the stock ticker threw him into contact with many leading men of the time, as well as the leading engineers, and soon after he formed a partnership with F. L. Pope, known as the Pope, Edison & Co. electrical engineers and general telegraph agency. Edison soon perfected a stock ticker that was used in New York and London, and from this he received his first real money in the form of a \$40,000 check from General Marshall Lefferts for his inventions on the ticker. With this money he bought machinery, rented a shop and began building stock tickers. He made over \$7,000 the first 3 months. In this early shop he gathered around him three men who became his greatest collaborators and organizers in later days, namely, Sigmund Bergmann, John Kruesi and Schuckert.

From this point in his career the narrative of his life is told in chapters dealing with his separate inventions in the following order: Automatic, duplex and quadruplex telegraphy; the telephone, motor-graph and microphone; the phonograph; the incandescent lamp; the complete system of electric lighting for cities; the electric light; the first central lighting station; the electric railway; magnetic ore milling; Edison Portland cement; the Edison storage battery; and miscellaneous inventions. The amount of work done on these inventions was phenomenal, Edison averaging often 20 hours a day for weeks at a time. The majority of this work was done in his own laboratory at Menlo Park, a small railway depot in New Jersey and an hour's ride of New York.

From his first patent in 1869 up to the summer of 1910 Edison secured no fewer than 1,328 patents, averaging thirty-two a year, or about one every 11 days. The height of his inventive activity was obtained in 1882, in which year no fewer than 142 were applied for and 75 of which were granted.

The two volumes are replete from cover to cover with stories and incidents of Edison's life, narrating his harassing experiences with the first central station in endless search for a suitable carbon for the incandescent light; his toils in perfecting the phonograph of today; his years of labors on the storage battery; and his sleepless days and nights in all of his other avenues of invention and research. The two volumes are worth reading from cover to cover and are easily the most interesting electrical and scientific romance yet published. Harper and Brothers, New York.



COUNT in Washington—In the state of Washington there are now 7,181 cars, according to Secretary of State I. M. Howell, 200 of these machines being owned in North Yakima.

Money for Oiling Roads—One hundred miles of unpaved streets in the city limits of Portland, Ore., will be oiled during the coming summer, the contract having been awarded to the Oregon Road Oiling Co. The aggregate cost will be between \$20,000 and \$30,000.

Mail Carriers Interested—The nine mail carriers working from the postoffice at Hastings, Mich., have offered to give \$25 for each mile of good roads built according to the state reward requirements on any of the roads leading into Hastings. There has been considerable interest aroused lately in building good roads, and several miles will be built this season.

Will Welcome Chicagoans—Detroit motorists, and particularly members of the Wolverine Automobile Club, are evincing a lively interest in the projected Chicago-Detroit run of the Chicago Automobile Club early in July, and it is being much discussed in the local club rooms. The Chicagoans can surely count on the hearty co-operation of the Wolverines as well as a royal entertainment. More than 300 members of the Wolverine club attended a smoker and lunch in the club rooms Saturday night. Vaudeville of an impromptu

FROM the

sort, contributed by club talent, made up the program. A special feature was a series of stereopticon views caricaturing prominent members. President Harry J. Porter was master of ceremonies.

Long Truck Trip—A 2-ton Laere lorry has just completed a 550-mile trip over the ranges of New South Wales, Australia. The accompanying illustrations show some of the road experiences of the truck. The truck was out 11 running days and was loaded to its full capacity with samples of a traveling salesman, who took this easy method of visiting his trade.

Election at Portsmouth—The Portsmouth Automobile Club, of Portsmouth, Ohio, held its annual election of officers recently, which resulted as follows: President, Theodore Doty; vice-president, Dr. Harry Schirman; secretary and treasurer, Dr. E. C. Jackson. These officers with the following members constitute the board of directors: Captain James Smith, Ben Harris, P. H. Harsha, Mark W. Selby, Coles Peebles and Ben Dillon. Plans are being discussed with a view of securing a new home. The Commercial Club site would make an ideal place, and providing the organization can secure sufficient members

and the amount for the purchase price can be raised a deal will likely be consummated placing the property in the hands of the club.

Road Built Wrong—Work on the 14-mile model road from New Orleans to Chef Menteur was to have been completed last week, but final inspection showed the contractor had made the crown too flat and the ditches too shallow over part of the distance. This will be remedied within a few weeks.

More Work for Bulldog—Dr. Charles G. Percival, who has been driving the Abbott-Detroit Bulldog on its 100,000-mile trip, is in Detroit arranging for another trip, this time to Mexico, which is scheduled to start from Kansas City, Mo., March 24. The car up to date has traveled 23,000 miles and is now on exhibition in Omaha.

Regulations in Nova Scotia—Consul Alfred J. Fleming, of Yarmouth, calls the attention of American motorists who visit Nova Scotia during the summer to a recent law passed by the council of Lunenburg county, between Yarmouth and Halifax, forbidding motorists from running their cars on Sundays, Wednesdays and Saturdays. Other counties have certain days whereon cars cannot be run, the average being 3 days per week.

Headed for Coast—The Kelsey motorette now on its way from Hartford to San Francisco is still on the move and is at Roanoke, Va. It had been delayed by heavy roads below Wilmington. The car struck days of deep, sticky mud, which almost was impassable, at times being over the hubs, but the little motorette always managed to pull through under its own power. The roads were so bad outside of Washington that it was necessary to turn back and take a different course.

Wolverines Get Busy—Unlimited enthusiasm was displayed by the Wolverine Automobile Club, when, on March 15, the directors of the club and some of the members, together with the Detroit board of commerce, journeyed to Lansing, where Senator Leidlein's good roads bill was being introduced and discussed before the Michigan state senate. E. S. George made a stirring appeal for better roads in the state of Michigan, and gave to the members of the senate a short history of what he and others in Wayne county has accomplished by the help of the board of commerce for the cause of good roads. H. S. Earle made a strong appeal to the senate, and informed the members of that body that the cities of Michigan paid 65 per cent of the cost of the roads and that the city of Detroit alone had paid out in labor for motor car building last year the sum of \$18,500,000, and that the taxes paid by these concerns in Detroit amounted to



LACRE LORRY AFTER LONG AUSTRALIAN TRIP

Four Winds

over \$6,000,000 a year, or one-quarter of what was asked in the Liedlein bill. The bill appeared to have very little opposition.

Cincinnati Wants Patrol—Cincinnati is figuring on a motor patrol system and has sent Chief of Police W. H. Jackson to Detroit to get pointers. At present Cincinnati has only one touring car for its police department, and this is used only in emergency cases.

May Organize a Union—Initial steps have been taken in Toledo looking to the organization of a chauffeurs' union. There are about 400 chauffeurs in the city, and the object is the regulation of hours and an increase in pay. A state law licensing motor car pilots also is desired. The union will be affiliated with the American Federation of Labor.

State Gets the Money—A number of petitions have been received by members of the Michigan legislature from their constituents asking that the present motor law be amended so that the counties in which the cars are owned shall receive the money paid for licenses to use in road work. Such a plan, however, has been declared unconstitutional and the money still will go to the state.

May Mean Asphalt Roads—If the county commissioners of Lucas county, Ohio, adhere to a decision announced last week all roads in this county will hereafter be constructed of asphalt. Legislation is now pending for the building of approximately 80 miles of country road in this county, all of which will be built of asphalt. The decision was announced after a junketing trip to a number of eastern cities. "We found that roads constructed of asphalt are as cheap as the tarbound macadam, and we have unanimously agreed to do away with the tar and use asphalt," said Commissioner Davis.

Good Good Roads News—The Automobile Club of Maryland at its monthly meeting adopted resolutions favoring the proposed \$5,000,000 loan and urging the city council to pass it and submit to the people at the municipal election in May. Assistant City Engineer R. K. Compton attended the meeting and explained to the members that Baltimore contains 5,000,000 square yards of cobblestones, and to eliminate these by appropriations made annually to his department it would require more than 60 years. With the \$5,000,000 paving loan about one-half of these stones could be removed in 6 years. The club also expressed its appreciation of the fact that Attorney Carvel D. Benson, of the good roads commission, has succeeded in obtaining the necessary order of court to compel the state comptroller to

pay over to the good roads commission the fund appropriated by the last legislature for the completion of the Washington-Baltimore boulevard.

Trying Tarvia Roads—The commissioners of Wyandot county, Ohio, will have constructed this summer several miles of tarvia road as an experiment. If it proves successful other roads will be built. The road is built as a solid pike with a patent tar covering.

Talking Roads in Ohio—In the hope that Ohio may fall in line and work in conjunction with many other states which have taken up the good roads movement, the Ohio Good Roads Federation will head a meeting in Columbus, at which the advisability of asking the legislature to pass an act providing for a state trunk system of highways will be discussed. Those behind the good roads movement would like to see a state appropriation of \$15,000,000 for this purpose. It is not, however, the plan to ask the legislature to make any such appropriation at the present time. If plans which have been suggested meet with the approval of those who attend the meeting the legislature merely will be asked for an appropriation

of \$75,000, which would be used in the next 2 years in preparing plans and estimates for the proposed trunk system of highways. The cost of a suggested system when completed, it is thought, would not total over the \$15,000,000 mark.

Wants Place on Circuit—Grand Rapids, Mich., may be on the national circuit. At least that is the way this city will line up if the officials of the western Michigan state fair carry through their plans.

Substitute for Show—Great enthusiasm marked the production of "Presto," or "The Tale of the Pail," given under the auspices of the Columbus Automobile Club, of Columbus, Ohio, at the Southern theater, March 16. The performance was given in place of the annual motor car show, which was called off because of inability to secure a suitable hall. "Presto" was an original musical comedy written by C. Roy Clough, a Toledo dealer.

Lancaster Club Election—The Lancaster Automobile Club of Lancaster, Pa., at its recent annual election, reported sixty-eight new members secured during the year. The election of officers resulted as follows: President, H. C. Schoek, Mount Joy; first vice-president, Dr. J. F. Trexler; second vice-president, J. H. Hoober; secretary, Jacob Rider; treasurer, Dr. W. H. Trout; directors, F. F. Groff, A. B. Landis, Rohrerstown, and George B. Kaffroth, Honey Brook.



LACRE LORRY IN CAMP IN NEW SOUTH WALES

Current Motor Car Patents

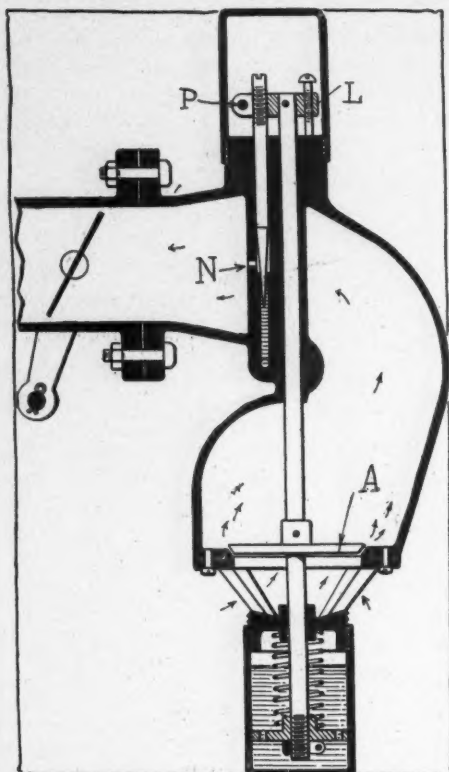


FIG. 1—WINTON NEEDLE-VALVE CONTROL

NEEDLE VALVE CONTROL—No. 984,874, dated February 21; to A. Winton, Cleveland, O.—In this carburetor, Fig. 1, the needle valve N is raised and lowered by means of air valve A, which is accomplished as follows: The stem of the air valve at its upper end is pinned in a short lever L, which is pivoted at the point P. The air entering lifts the valve A and the lever L is correspondingly lifted, raising as it does to a lesser degree the needle valve N. As the needle valve N threads into the lever L, and has a transverse slot in its top, it can be adjusted to any desired opening with a screw driver.

Wick Carbureter—No. 985,122, dated February 28; to H. W. Ashmunsen, Kings Park, N. Y.—In this carbureter, Fig. 5, the gasoline is conveyed by means of a wick W, which extends entirely across the

base of the mixing chamber. Just beyond the wick is a spring-controlled valve or doors E, which is opened by the passage of the air which is in the direction of the arrow, the air entering the passage at one end and exiting to the motor at the other.

G. & A. Carbureter—No. 985,670, dated February 28; to P. J. Grouvelle and E. H. Arquembourg, and L. J. Joraet, Paris, France.—This carbureter has a main air passage into which the gasoline enters from the nozzle. It has an auxiliary air passage A2; and it contains a horizontal tube A3 in which is a revolving throttle T. This throttle has three openings, one for the main air, one for the auxiliary air, and one controlling the exit E to the motor. The opening for the main air through its passage is longer than that for the auxiliary air, so that the area of the passage for the main air is suitably proportioned to that of the auxiliary air and also to that of the exit E. This arrangement being such that the inlet for auxiliary air can be closed without risk of accidental opening while the main air passage remains open.

Sleeve-Valve Motors—No. 985,198, dated February 28; to A. E. Osborn, New York—Fig. 2 shows this motor. The intake and exhaust passages are at one side and are controlled by a piston valve, together with a secondary valve. The piston valve is arranged to control one end of both the intake and exhaust passages, and in its movement to override them successively; and the secondary valve is arranged to control the other end of these openings. Both valves are operated from a half-time shaft driven from the crankshaft.

Shock Absorber—No. 984,377, dated February 14; to D. F. Kilgour, Lexington, Mass.—This is a plunger type of liquid shock absorber, in which the plunger attaches to the car frame and the cylinder in which the plunger works to the car axle, or spring. The cylinder is surrounded by an annular space and in the rings into the annular chamber and so by-

cylinder walls are circles of very small openings of different sizes, these openings being of largest diameter midway between the top and the bottom of the cylinder, and gradually reducing in diameter and number towards the top and bottom. When the plunger works up and down, the liquid must pass out through these open-

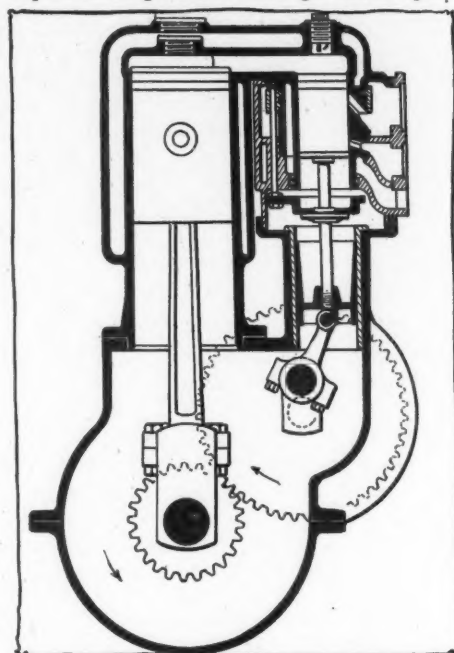


FIG. 2—OSBORN SLEEVE-VALVE MOTOR

pass the plunger. The gradation of shock-absorbing features is accomplished by the change in diameter and number of these holes, so that there is a progressional increase of resistance as the plunger reaches either end of the cylinder.

Segmental Tire—No. 985,397, dated February 28; to L. A. Coleman, Norfolk, Va.—In this patent, Fig. 3, the resilient factor is a series of air compartments in the wheel tire. Each air compartment is a separate one, with its own valve, and occupies approximately the space between two spokes. These several compartments are formed in, what might be termed, a tire casing.

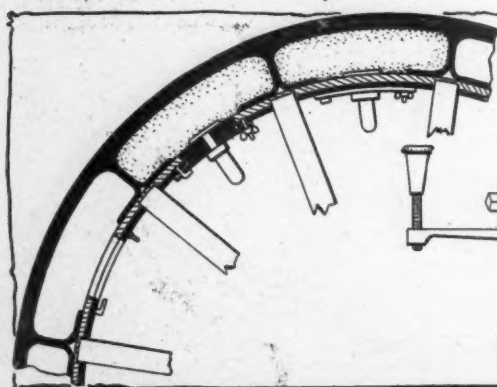


FIG. 3—SEGMENTAL AIR TIRE

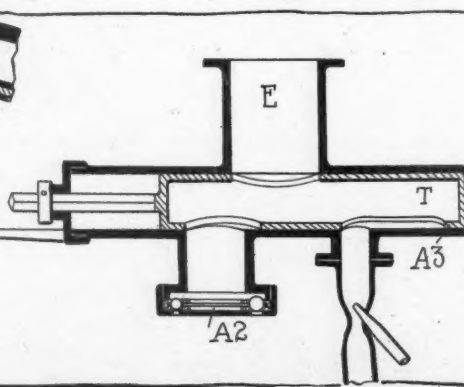


FIG. 4—G. & A. CARBURETER FEATURE

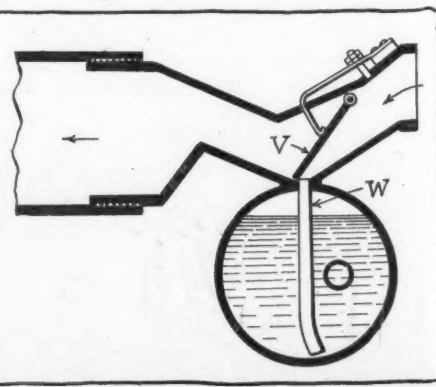


FIG. 5—WICK TYPE CARBURETER



The Motor Car Repair Shop

In the motor car repair shop one of the most common kinds of repair is that of removing an old spring and replacing it with a new one, and simple as it might seem it is possible for an unskilled workman to make a most laborious job of it. The first thing to be done in removing a spring is to loosen the shackle bolt nuts. This should be done while the weight of the car still rests upon the springs. To do this it is first necessary to examine the end of the shackle bolt and see that it has not been riveted over to keep the nut from getting loose. If the bolt end has been riveted over, one must first tighten the nut up a bit, then file away the riveted or expanded portion. If this is overlooked, and a wrench is applied to the nut, the nut will run up onto the riveted portion and then jam fast so that it will not come off. To the novice this will simply indicate that a larger wrench is required, and applying the larger wrench, either the lug near the head of the bolt, which is provided to keep the bolt from turning when the nut is tightened up, will be twisted off, or if this holds fast, the nut may be turned off over the riveted portion, and have all of its threads ruined, and a new nut will be required; or, perhaps, the end of the shackle bolt will be twisted off. So much for the shackle nut.

The next operation is the removal of the shackle bolts. As for this the most common error lies in either jacking up the frame too high or not high enough, or in jacking up one side only, so that the spring eye grips the shackle bolt tightly and renders its removal very difficult. When this occurs, the novice will take a hammer and pound on the protruding threaded end of the shackle bolt until the end of it and the threads have been badly burred up and expanded, so that as the protruding end is driven in it gets tighter and tighter, then sticks fast and a real mechanic is called upon to get it out. Now if after the nut has been removed, the car frame had been jacked up to the same height on both sides of the car, and this height such that the springs would be in practically a neutral position, that is, neither supporting the frame nor the axle, then it might have been possible to remove the shackle bolts with the fingers, or a few light taps of the hammer at the most. It must be borne in mind that when only one side of the car is jacked up the axle will not be parallel with the frame, and one spring will be compressed while the other is expanded, so that, perhaps, even one wheel is lifted from the floor. It is obvious that, under such conditions, there will be quite a twist in the spring, which naturally will tend to grip the sides of the shackle bolt very tightly.

Removing a Spring—Repair Crane and Motor Stand

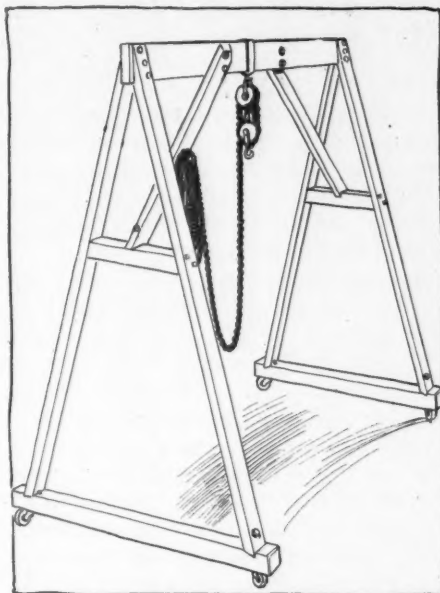


FIG. 1—PORTABLE CRANE

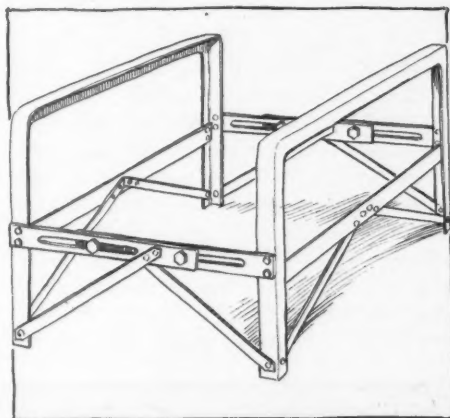


FIG. 2—ADJUSTABLE MOTOR STAND

Before going further it might be well to go back and explain how a real mechanic would finally get out a bolt after it had been jammed into the spring eye, as above described; it would be very simple; he would drive the bolt back so that the damaged end protruded again, dress off the expanded portion with a file, then jack up both sides of the car properly and remove the bolt.

Having succeeded in removing the shackle bolts of a spring, it must then be detached from the axle by removing the spring clips; and before removing the spring clips which hold a spring to the axle it is advisable to wrap a few turns of wire around it close to the axle, so that when the clips are removed the leaves will not spread or fall apart. This not only will facilitate its removal, but enables the operator to handle it more conveniently after it is removed. Of course, many springs are provided with a bolt in the center for holding the leaves together, but often even these are sheared off so that the leaves will fall asunder when the spring is removed, and both time and trouble is required to properly assemble them again. Fig. 3 shows how this may be avoided.

Useful Portable Crane

In several repair shops in Boston portable cranes, such as is illustrated in Fig. 1 are to be seen in daily use. This type of crane is made chiefly of wood, stands about 12 or 14 feet high and is mounted on castors. The castors are of iron and iron bolts are employed to bind the structure together. An iron hook hanging from the center of the top cross beam supports a substantial block and tackle, and another hook is provided at a convenient height on one of the uprights of either side of the structure for the purpose of holding the chains and rope slings used in connection with the block and tackle. This structure is found very useful in removing motors, gearsets and bodies from motor car chassis, and for holding up the frame for removal of front or rear axles.

Adjustable Motor Stand

In Fig 2 is shown an adjustable motor stand adapted for use in the motor car repair shop where different sized motors are overhauled. It is a simple structure made entirely of iron, and by loosening two nuts and bolts at either end, the side members of the framework may be adjusted to take a motor of any ordinary size. The side supporting members are inverted U-shaped pieces of angle iron, and the bracing is of plain band iron. A stand of this character is being used to good advantage in a New England repair shop and has several advantages over the non-adjustable wooden structures.

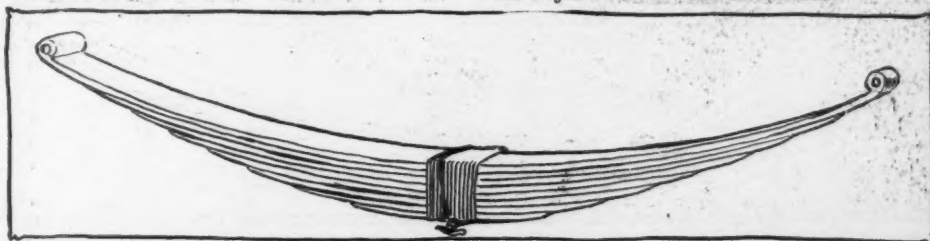
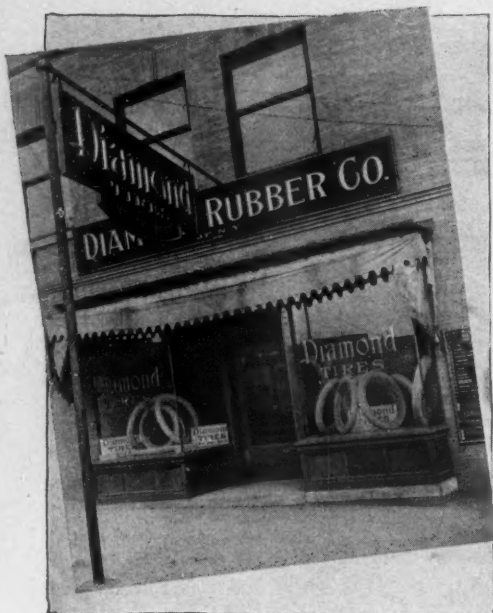


FIG. 3—WRAPPING WIRE ON A SPRING IN A REPAIR



OMAHA DIAMOND RUBBER CO. BRANCH

TRACY a Truck Engineer—Joseph Tacy has been retained by the Morgan Motor Truck Co., of Worcester, Mass., to act as its consulting engineer for a period.

Fenner with Alden Sampson—An important link was added to the chain of organization of the United States Motor Co.'s truck division by the appointment of David C. Fenner as sales manager of the Alden Sampson Mfg. Co., announcement of which was made this week. Mr. Fenner has had 8 years' experience and study of motor transportation.

New Truck Concern—Eugene Goldman, Herbert Haase and Frank Dawson, previously general manager, sales manager and manufacturing superintendent respectively of the Randolph Motor Car Co., of Chicago, have resigned from that company and have organized the Mogul Motor Truck Co., a concern who manufacture motor trucks in 2½, 3½ and 5-ton capacities in Chicago. After May 1 they will

occupy the old Randolph factory at the corner of Root street and Princeton avenue, Chicago, and the sample cars will be ready within 2 weeks.

Educating E-M-F Agents—Nearly 200 E-M-F agents of Georgia, South Carolina and Alabama gathered in Atlanta, Ga., last week for an educational meeting. W. E. Flanders, president of the company; Paul Smith, assistant sales manager; H. L. Cunningham and J. G. Heaslet, consulting engineers; Frank Shaw, traffic manager; E. LeRoy Pelletier, advertising manager, and other officials of the E-M-F company were present at the meeting.

Has Big Rubber Supply—Current report is to the effect that one of the large rubber companies of Akron, O., has amply forestalled any possibility of embarrassment at this time or in the immediate future on account of the rise in the price of crude rubber. Large consignments have been arriving at Akron for several months and at this time it is said that the company has on hand more than 1,500,000 pounds stored. It is also said that consignments soon to arrive will bring this amount up to at least 3,500,000 pounds.

Tire Plant Nearly Ready—The American Tire and Rubber Co., which broke ground at Akron, O., 3 months ago, will complete its plant in about 10 days. The company, which has a capital stock of \$200,000, will manufacture carriage and all kinds of vehicle tires as well as motor car tires, inner tubes and accessories. A reclaiming plant also is being built in connection with the main factory. The machinery, which has been ordered from Derby, Conn., is expected to arrive shortly. After setting this up it will be a comparatively short time before the wheels

turn and the factory begins the manufacture of its product. The company is financed mostly by Akron capital, Adam Duncan, of the Akron Soap Co., being president of the new concern.

New York Election—At a meeting of the board of directors of the Licensed Automobile Dealers of the City of New York the following were elected officers for the ensuing year: President, John F. Plummer, Locomobile Co. of America; vice-president, Carl H. Page, C. H. Page & Co.; secretary and treasurer, Charles P. Skinner, Mitchell Motor Car Co.

Changes in Indianapolis—A number of changes have taken place in Indianapolis trade circles. The Gibson Auto Co. has just become distributing agent for the Krit, while the Fisher Auto Co. has taken on the Alco, which heretofore has not been represented in Indianapolis. The Stevens-Ensel Co., handling the Speedwell and Abbott-Detroit, has located at 330 North Illinois street, while the Indiana Motor Sales Co., with the Continental, has located at 332 North Illinois street.

Portage Company Election—At the annual meeting of the stockholders of the Portage Rubber Co., of Akron, Ohio, the following officers were elected for the coming year: President, James Christy; vice-president, John W. Miller; treasurer, Arthur S. Mottinger; secretary, Gillum H. Doolittle, and general manager, W. W. Wildman. The following board of directors also was elected: James Christy, John W. Miller, John Kerch, Dayton A. Doyle, M. S. Long, James D. Raw, Arthur S. Mottinger and W. W. Wildman. The new plant of the company, the construction of which has already been begun, will be built beside the present reclaim-



SHIPMENT OF E-M-F CARS RECEIVED BY AUTO LIVERY CO., OF NEW CASTLE, PA.

and Dealers

ing plant of the company in Barberton. The directors also voted to pay the first quarterly dividend on the 7 per cent preferred stock, 1¾ per cent on April 1, this dividend to be paid out of the earnings of the company's reclaiming plant.

Makers of Electrics Prospering—At a meeting of the stockholders of the Ohio Electric Car Co. it was decided to increase the capital stock of the concern from \$150,000 to \$250,000. The new stock will first be offered to the present stockholders at par. The company recently purchased a 10-acre site for building purposes on Bancroft street, and the increase in capital was made to provide funds to erect a large factory structure. The company has heretofore occupied a portion of the Milburn wagon works, but will soon have a plant of its own.

Mitchell Branch in New York—Upon his return from New York Captain William Mitchell Lewis, president of the Mitchell-Lewis Motor Co., Racine, Wis., announced that arrangements have been completed for the establishment of an eastern branch in New York city. The company has leased the first and second floors of the Pasadena building at Sixty-first street and Broadway and purchased a site at West Fifty-fifth street, upon which will be erected a six-story building with dimensions of 50 by 125 feet, to be known as the Mitchell service building. The agency heretofore existing as the Mitchell Motor Co. of New York will be taken over and merged into a new company under the name of Mitchell Sales Corporation. James W. Gram, of the factory executive force, will go to New York as active resident manager. Warren D. Brown, Charles P. Skinner and O. R. Delsmeter of the former agency will be as-

sociated with the new corporation in official capacities. The Mitchell Sales Corporation will take care of all Mitchell business in the east, including New England and southward to the Mason and Dixon line. This branch will oversee the distribution of 2,500 cars for 1912, it is announced.

Dinner for Agents—H. W. Blevins, of Toledo, president of the Blevins Auto Sales Co., gave a banquet at the Secor hotel Thursday night to about fifty members of the selling force, territorial agents and representatives of the E-M-F, Gramm and Ohio electric factories. Blevins acted as toastmaster. Short talks were made by J. C. Lynch, C. E. Stebbins, B. A. Gramm, W. H. Doering, S. P. Holmes, Charles Doan and C. P. Adams.

Moving to Findlay—The first shipment of machinery from the Lockport Stamping Co.'s plant and the American Motor Truck Co., Lockport, N. Y., which recently consolidated with the Findlay Motor Co., has arrived at Findlay, Ohio. L. E. Ewing, president and general manager of the new company, who has been in the east looking after the removal, has returned home and the work of setting up the machinery already has begun. New men are being added to the force daily and operation will start soon.

Josephs Goes Abroad—J. S. Josephs, treasurer of the Fiat Automobile Co., has gone abroad for a brief business visit to the Fiat works at Turin, Italy. He was accompanied by David Bruce-Brown, who will drive Fiat cars in road and speedway races this year. Mr. Josephs and Mr. Bruce-Brown expect to be gone about 3 weeks. The Fiat racing car that Bruce-Brown will drive in the sweepstakes at the



BRANCH OF PREST-O-LITE CO. AT OMAHA

Indianapolis speedway on Decoration day is now being completed at the Turin works.

Adding to Motor Plant—The Continental Motor Mfg. Co., of Muskegon, Mich., has had plans prepared for an addition to its plant to cost between \$50,000 and \$60,000, but it is stated that the work of building has been indefinitely postponed, owing to the recent labor trouble.

Clinton Fiat Sales Manager—H. T. Clinton, who for the past 2 years has been western manager for the Fiat Automobile Co., located in Chicago, has been made general sales manager of the Fiat company, succeeding Harry Fosdick. Before going with the Fiat company Mr. Clinton for nearly 4 years was advertising manager of the Association of Licensed Automobile Manufacturers. Clarence Buckwalter will manage the Chicago Fiat branch.



SOME OF THE OLDSMOBILE OWNERS IN TOWN SQUARE AT CORDELLE, GEORGIA



Brief Business Announcements



WASHINGTON, D. C.—Wine & Benson, the Moline agents, have taken on the Premier.

Hartford, Conn.—C. S. Payne has secured the local agency of the Palmer-Singer.

Washington, D. C.—The Reo Motor Co. has leased the building at 1405 Fourteenth street.

Charlotte, Mich.—James Shaul will open a new establishment April 1 in the Shaul building, where he will handle accessories.

Atlanta, Ga.—It is probable that the Marathon car, made in Nashville, will soon be represented in Atlanta by a branch house.

Lock Haven, Pa.—The Lock Haven Automobile Co. has been formed at Lock Haven by C. R. Armstrong, R. S. Quigley and A. C. Candor.

St. Louis, Mo.—The Fire-Ball Gas Tank and Illuminating Co. has established in St. Louis a filling branch for the sale and refilling of Fire-Ball gas tanks.

Cleveland, O.—Webb & Pedlow, Jackson agents, have removed their sales rooms from East Ninth street to 1924-26 Euclid avenue. The company also handles Krit cars.

Washington, D. C.—The Hudson agency has been changed from the Dupost Sales Co. to H. B. Leary, Jr., who has opened a salesroom at 1317½ Fourteenth street, N. W.

Columbus, O.—John H. Howald, central Ohio agent for the Buick and the Welch, located at 172 North Fourth street, will enlarge his quarters by taking over the storeroom immediately south.

Brooklyn, N. Y.—Work has begun on a new brick and concrete two-story building, with concrete front, for the Barnum Automobile Co., at the rear of the company's present quarters at 1285 Bedford avenue.

Walla Walla, Wash.—A. K. Dice and I. W. Sims will commence the erection of a two-story brick garage on South Second street, two blocks and a half from Main street. It will be 70 feet wide and 120 feet long.

Philadelphia, Pa.—Announcement is made that the Fischer Motor Car Co., 310-316 North Eleventh street, has secured the Philadelphia agency for the Atterbury commercial truck for this city and vicinity.

Toledo, O.—The Locke-Cone Sales Co. is the style of a newly organized concern in Toledo which will handle motor cars. The company has secured salesrooms on Huron street. A deal was this week closed whereby it will handle the line of trucks put out by the Adams Brothers Co. of Findlay, O. Its territory will embrace

northwestern Ohio. Thomas D. Cone and James P. Locke are the active members of the new selling concern.

St. Louis, Mo.—The Park Automobile Co. has taken the agency for the Morgan truck.

Cleveland, O.—The Horsey Mfg. Co. has removed its offices and salesrooms to 5606 Euclid avenue.

New York—The Carhartt Automobile Sales Co. has moved into its own building at 1989 Broadway.

Columbus, O.—T. J. Cannon, Ohio agent for the Schacht, has opened headquarters at the Kaiser Motor Car Co., of West Main street.

La Crosse, Wis.—The La Crosse Plow Co., state distributor for the Imperial, has been appointed state agent for the Krit and Richmond lines.

Baltimore, Md.—The Mack Motor Co., J. J. Smith, president, has opened up a garage at 12 West Eager street. The garage will be used only for Mack trucks.

Baltimore, Md.—Howard M. Schaum has become manager of the Dixon C. Walker Automobile Co., agent for the E-M-F, Garford, Flanders cars and the Grabowsky truck.

Milwaukee, Wis.—The Hickman-Lauson-Diener Co., Milwaukee, Wis., state agent for the Ford, is handling on the average of twenty carloads of Ford models every week.

Milwaukee, Wis.—The King Leather Tire Co., Milwaukee, Wis., has increased its capital stock from \$20,000 to \$25,000. The new issue is to provide for additions and extension of the business.

Milwaukee, Wis.—The new plant of the Brodesser Motor Truck Co., of Milwaukee, at Juneau, Wis., is now ready for business. The company has recently been awarded a single order for 1,000 trucks by Chicago interests, it is said, and work on these has been started.

Fond du Lac, Wis.—The Bush Auto Co. has been organized at Fond du Lac, Wis., by A. L. Bush and L. N. Bush to handle the Nyberg-Chicago products. The company has established headquarters at 110 East Second street and will cover Winnebago and Fond du Lac counties.

Milwaukee, Wis.—The Auto Parts Mfg. Co., a new Milwaukee corporation, has opened for business at 161-171 Michigan street, in the new Stroh building. The company will manufacture a line of accessories, including a new type of tire holder for fore-door cars, adjustable bumper, melody horn, alcohol vulcanizer and windshield. Thomas J. Pringle is president. A. M. Sonnischen, vice-president and general manager, has been superintendent of

the Garage Equipment Mfg. Co., of Milwaukee, for 2 years. D. L. Nauman is secretary and treasurer.

Pittsburg, Pa.—B. F. Benson, North Craig street, has secured the Pittsburg agency for the Brush.

Granton, Wis.—The Knorr-Rausch Hardware Co. has been appointed Ford agent for the greater part of Clark and Jackson counties.

St. Louis, Mo.—Frank Bridgewater, formerly of Whitehall, Ill., is the new manager for the Kardell Motor Car Co.

Worcester, Mass.—Herbert J. Reeves has been chosen Worcester agent for the Ohio cars. Mr. Reeves will take up his location at 3 Hudson street.

Spokane, Wash.—Taylor & Dunlap, Paterson distributors, have established temporary quarters at the old Cadillac garage, 707 Front avenue.

Los Angeles, Cal.—A two-story building that will be erected at the northeast corner of Eighth and Los Angeles streets for George K. Darling, will be used for a garage.

Jackson, Mich.—Fred B. Havens of this city has purchased stock in the Ruby Mfg. Co. and has accepted the position of sales manager. The company makes portable garages.

Baltimore, Md.—The Madison Motor Car Co., agent for the Paige-Detroit and Velie, has purchased the property at 1416 Madison avenue, which will be converted into a garage and display room.

Worcester, Mass.—Ernest O. Wheeler, manager of the Commonwealth Motor Mart of this city, has been appointed local agent for the Knox and Velie and will also represent the Knox motor trucks on Central street.

Columbus, O.—The Columbus Auto Brass Co. has added a department for the rebuilding of bodies. The company has a plant at 181 West Maple street. G. E. Smith is president and H. S. Kauffman, general manager.

Springfield, Mass.—William H. Baxter, agent for the Paige-Detroit, Johnson and Cole, is enlarging his present quarters at 83 Dwight street to twice the capacity by the addition of another story and increasing the main floor area.

Milwaukee, Wis.—Julius Andrae & Sons Co., 358-364 Broadway, suffered another loss by fire last week when an adjoining building was badly damaged. On January 7 the Andrae building at 118-122 Sycamore street was totally destroyed by fire, but the company was ready for business in new quarters on Broadway within 2 days. The last week's loss was only \$3,000, while the first loss was more than

\$125,000. The Andrae company is one of the largest electrical supply houses in the northwest.

St. Louis, Mo.—With A. B. Wagner as manager, the Michelin Tire Co. will open in St. Louis a distributing depot at 4014 Olive street.

Philadelphia, Pa.—Harry Gill has a contract for a two-story garage at 2330 Market street, southeast corner of Twenty-fourth and Market streets.

Worcester, Mass.—Leroy Leighton, local agent for the Hudson, has leased the old Harrington salesrooms and will have the quarters remodeled completely.

Milwaukee, Wis.—The Lemke Electric Co., formerly the Lemke-Briggs Electric Co., has moved from the Miller building to larger quarters at 280-282 Lake street, Milwaukee.

St. Louis, Mo.—The Van Cleave Motor Car Co., 4914 Delmar boulevard, has taken the agency for the Dayton electric for the city of St. Louis, East St. Louis, and towns in the immediate vicinity.

Detroit, Mich.—The Hydraulic Oil Storage Co. of Detroit, Mich., has opened a Pittsburg office at 239 Fourth avenue, where B. Starr will handle all the western Pennsylvania business of the company.

La Crosse, Wis.—Fox Brothers have been appointed district agent for the Richmond, Krit and Imperial, for which lines the La Crosse Plow Co. is state distributor. Fox Brothers are now building a large garage at 205-207 State street.

Lewiston, Idaho—The Rambler will be handled in Lewiston by the Western Hardware Co., and in Walla Walla, Wash., by Paul Thonney, Jr., these subagents having been appointed by the McCarthy Automobile Co., of Spokane.

Beaver Dam, Wis.—A. E. Fischer, proprietor of the Silo garage at Beaver Dam, has sold a half interest to Alderman A. C. Belling, and the partnership will be known as the Silo Garage Co. A large machine and repair shop will be added at once.

Worcester, Mass.—The D. A. Baldwin Co. of this city has taken on the Velie agency in this city, having closed contracts with Morton H. Luce of the Velie Boston branch. E. O. Wheeler will take charge of the Velie and sales and maintenance.

Washington, D. C.—The Rambler Automobile Co. of Washington has leased for a long period the building at 1220 New York avenue, known as the Rambler building, and will occupy it as a salesroom for Rambler cars about the middle of March.

Baltimore, Md.—A certificate of incorporation of the Auto Transfer Co., of Cecil county, has been filed in Elkton for the purposes of operating motor buses between Elkton and Chesapeake City to carry passengers, parcels, express matter and mail. The motor cars will displace stages. The incorporators are George S.

Woolley, James S. Hopper, J. Polk Steele, George N. Bennett and others in Chesapeake City and Elkton.

New York—Louisa D. Dienner will build a two-story garage on the south side of Intervale avenue, west of Tiffany street.

Eau Claire, Wis.—The American Motor Co., Water street, is overhauling and rebuilding its garage and salesrooms at a cost of \$5,000.

Milwaukee, Wis.—William F. Mueller, Farwell avenue and Brady street, Milwaukee, has been appointed Wisconsin distributor for the Michigan car.

Appleton, Wis.—W. D. Legge, general manager of the Eagle Mfg. Co., motor builder, has resigned to accept a similar position with the Schmidt Brothers Co., Davenport, Iowa, builder of gasoline engines.

Pittsburg, Pa.—The Pennsylvania Sales Corporation, of which J. W. Thubron is manager, has secured the agencies for the Michigan and the Westcott cars. The corporation will be a factory distributor for both cars and is fitting up a fine salesroom on Seventh street downtown.

Kalamazoo, Mich.—The new salesroom of the Reid Automobile Co. is now completed. Mr. Reid intends to use the rear part of the building for offices and general stock rooms. The balance will be used for the display of the Buick, Michigan, Oldsmobile and Detroit electric.

Prairie du Chien, Wis.—J. N. Brunton has completed the erection of a new garage, which will be known as the Prairie City Garage Co. For the convenience of tourists Mr. Brunton has arranged with the owners of the Mississippi ferry to carry all cars to the Iowa side free of

charge and has constructed a neat landing and approach on the river front for this purpose.

Spokane, Wash.—J. A. Stoner, former manager of the Standard Motor Car Co., has joined the Packard staff in Spokane.

Baltimore, Md.—The Pullman-Shaffer Motor Car Co. has taken on the agency in this territory for the Penn car. The firm also handles the Pullman car.

Milwaukee, Wis.—The Havers six is being demonstrated in Milwaukee, headquarters having been established in the Blenheim garage, Twenty-sixth street, near Grand avenue.

Portland, Ore.—Harry W. Doherty, formerly of Los Angeles, has come to Portland to take charge of the Peerless and Pope-Hartford agencies handled by the H. L. Keats Auto Co.

Detroit, Mich.—The Metzger Motor Car Co. announces the appointment of Charles Calvert as its direct factory representative in Newark, N. J., and the surrounding counties.

Pittsburg, Pa.—Frank C. Kunkel has been appointed to manage the Pittsburg agency of the F. B. Stearns Co. of Cleveland and is now established at 5813 Penn avenue, east end.

Baltimore, Md.—C. R. Mizner, local agent for the Oldsmobile, has received word that Baltimore has been selected as the distributing point for the south for the Oldsmobile. Marshall C. Carlton has joined the sales force of the local Oldsmobile agency.

Boston, Mass.—The Edison Electric Illuminating Co. has decided to open a public garage for trucks in Boston. It will be the first garage in the city exclusively for electric commercial vehicles. It will be operated as the first sanctioned garage of the Electric Vehicle Association of America.

Chicago—The American Ever Ready Co., handling motor accessories, including the Ever Ready self-starter and speedometer, has moved from 184 Lake street to 1240 Michigan avenue, where two floors are occupied. E. J. Tobin continues as manager and A. E. Barlow as sales manager.

Milwaukee, Wis.—The Inland Mfg. Co., Manufacturers' building, Milwaukee, Wis., has changed its name to the Yale Mfg. and Sales Co. The company specializes in motor car parts and accessories and has been putting a new type of horn and whistle blower on the market under the name of Yale blower.

Cincinnati, O.—The Ohio Mail and Parcel Transportation Co. has been incorporated with a capital of \$50,000 to transport mail, messages, packages and in fact do a general delivering business. It is proposed to use motor cars and motor trucks. The incorporators are C. A. Lee, L. Alvin Kreis, Walter Schmitt, M. J. Dosch and Emil Strauss.

Recent Incorporations

New York—United Auto Supply Co., capital stock \$10,000; to manufacture and deal in motor car supplies and accessories; incorporators, G. E. La Vietes, M. La Vietes, and J. L. Lazaree.

New York—Cody Motors Co., capital stock \$100,000; to manufacture motor cars, electric motors, etc.; incorporators, A. McMullen, Jr., R. L. Kelly and J. C. Mullin.

Atlantic City, N. J.—Eastern Motor Co., capital stock \$50,000; to manufacture motor cars, motorcycles, etc.; incorporators, E. G. Harris, W. E. Riley and P. G. Clark.

Brooklyn, N. Y.—Ayres Steam Truck Co., capital stock \$5,000; to deal in and manufacture commercial trucks; incorporators, J. T. Abell, A. B. Falkenburgh and E. Y. Eltonhead.

Chicago, Ill.—Punctureless Tire Co., capital stock \$5,000; to deal in motor cars, tires and motor car specialties; incorporators, C. E. Roy, J. Dahl and H. L. Roy.

Mifflinburg, Pa.—Mifflinburg Body and Gear Co., capital stock \$30,000; to manufacture bodies, gears, etc.

New York, N. Y.—Automobile and Outlet Co., capital stock \$20,000; to manufacture and deal in motor cars; incorporators, J. G. Stevenson, D. H. Lehman and E. T. Harvie.

Newark, N. J.—Automobile Mfg. Co., capital stock \$500,000; to manufacture and deal in motor cars; incorporators, A. E. Egner, W. E. Brown, Jr., and C. English.

Boston, Mass.—Knox Street Garage, capital stock \$10,000; incorporators, C. P. Metcalf, W. H. Sanborn and J. V. Tardiff.

Boston, Mass.—Warren Garage Co., capital stock \$3,000; incorporators, J. J. Barry, P. W. Fay and Daniel E. Higgins.



Legal Lights and Side Lights

PROMOTERS' LIABILITY

NOW that preparations are going on for the renewal of the American road racing classics naturally promoters are interested in the legal angles. Therefore the decision in the case of Bogart vs. the city of New York, 93 N. E., N. Y., 937, should be valuable in throwing light on the liability of the promoters. It is as follows:

"A city council has no power to authorize the use of public streets by a motor club for motor races to be held within certain hours on a particular day, and such use of the street is illegal.

"Where a spectator was voluntarily present to witness motor car races on a public highway, illegally authorized by the city council, his administrator could not recover against the city for his death, resulting from being struck by a motor car swerving in its course and leaving the highway on the theory that the contest was illegal in the absence of proof of negligence.

"On an issue as to whether intestate, killed in a motor car accident, was a traveler when struck and killed or a voluntary spectator at certain motor car races being illegally held on the street, the widow was not entitled to testify that he expected to go to the races and to go to a beach afterwards, she being entitled at most to testify to the facts and circumstances from which decedent's intention was deduced."

SITUATION IN CONNECTICUT

Connecticut's legislature is now wrestling with the proposed changes in the motor laws, but close followers do not anticipate that the general assembly will materially alter the present statutes, which are regarded as among the best in the country. At the session 2 years ago the general motor law was passed after numerous hearings and much discussion on the floor of the house and senate and it is pretty generally conceded to be about as near perfection as it can be made. For this reason no material changes are looked for.

Town selectmen and rural representatives have been behind an effort to limit the speed of motor cars to 25 miles an hour, and although the committee on roads, rivers and bridges has not as yet reported on this measure, an adverse report is anticipated, for at the hearing the opinion prevailed that the law, as now framed, covers the speed question sufficiently. At the recent hearing, J. N. Brooks, secretary of the Connecticut Automobile Association, said that the association would like a definition of the word "dealer," as used in the law, this action being taken to compel dealers to have

an established place of business, so that individual owners cannot club together to sell motor cars, thereby dodging taxes and licenses. Mr. Brooks urged the committee to carefully consider the question of reducing taxes, stating that at present the motorists of Connecticut are paying a higher rate than any other state in the United States. The question of a speed limit for testing cars and also bringing all cars to a full stop when passing a trolley car which is not moving were also heard.

BAY STATE MATTERS

The committee on roads and bridges of the Massachusetts legislature has nearly finished with its hearings on motor bills and the reports are being awaited anxiously. The most important one, dealing with lights on all vehicles at night, has not been reported and it is said that there is a big split among the committee over the matter. However, as the bill was reported last year, it is expected that one will be sent to the legislature again this year. In case the committee does not report the bill an effort will be made to have it reported from the floor of the house.

Mayor Fitzgerald's bills on motor car fees were given a hearing last week. He withdrew those asking that the fees be increased, but spoke in favor of securing part of the state revenue for the Boston park system. A conference was suggested and this proved agreeable. The men who will meet will be Mayor Fitzgerald, Chairman Harold Parker, of the highway commission, Superintendent Pettigrew, of the Boston park department, and Lewis R. Speare, of the Massachusetts State A. A. The result of the conference will be sent to the committee later.

TEXAS HOPES FOR ROADS

If the bill that is now pending in the Texas legislature providing for the creation of a state highway commission and making an appropriation of \$200,000 for the purpose of carrying out the preliminary work towards the construction of a system of state highways is not passed at the present session, the movement will be taken hold of by the different counties along the proposed route and the highways will be built by a series of bond issues, in the same manner that the separate counties now carry on their respective road building and improvement work. The special object of the proposed highway commission is to make the proper surveys, pass upon and adopt materials of construction, and perform other duties that would bring about a uniformity of the highway system.

The two trunk highways will traverse

the state east and west and north and south. It is the purpose of the promoters of the movement to construct the north and south line from some point on the gulf coast to the Oklahoma line, where it will connect with the highway system of that state, the latter in turn connecting with the systems of Missouri and Arkansas. Preliminary steps already have been taken by the Gulf Coast Good Roads Association, which has its headquarters in Galveston, to construct an extensive system of highways in the gulf coast region, extending from Corpus Christi on the west to the Louisiana line on the east. This latter system will be constructed by the different counties, and, in fact, links in the proposed trunk line have already been built.

The proposed Texas highway system also will connect with that of New Mexico. The territorial good roads commission of New Mexico recently established five camps on the proposed highway that is to be built from the Texas boundary to Las Cruces. This link is to be a part of the great scenic highway that has already been constructed in greater part between Santa Fe and Las Vegas and between Santa Fe and Albuquerque, as well as from the Colorado state line to Raton and Cimarron. The commission also has established a camp on the stretch of highway that is to be constructed between Bernalillo and Albuquerque.

SOME SHORT DECISIONS

"The negligence of the driver of a motor car is not ordinarily to be imputed to one riding merely as a guest who is himself in the exercise of due care."—Littlefield vs. Gilman, 93 N. E., Mass., 809.

"An ordinance taxing motor cars and other vehicles is not objectionable because it does not include motor trucks used for hire or without hire; the term automobile being sufficiently comprehensive to cover both. A city ordinance taxing motor cars and other vehicles is invalid as an unreasonable discrimination and classification, in that it omits motor cars used in connection with the owner's business, while vehicles used for same purposes, drawn by horses, are taxed."—Kellaher vs. City of Portland, 112 Pac., Ore., 1076.

"A driver of a motor vehicle, who negligently, because of excessive speed or not having his machine under control, fails to keep to the right of the intersection of a public street, when turning to the right, but crosses to the left instead and collides with another vehicle lawfully upon that side of the street, whose driver is free from negligence, is responsible for the consequent damages."—Molin vs. Wark, 129 N. W., Minn., 383.